# The Indiana Floodplain Mapping Initiative



FEMA

Prepared by the
Indiana Department of Natural Resources
Division of Water

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## Credits

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## Executive Summary

The Indiana Floodplain Mapping Initiative is a conceptual proposal by the Indiana Department of Natural Resources, Division of Water, to assume certain responsibilities for FEMA's Map Modernization program in Indiana. The proposal is for the Engineering Services Center and the Floodplain Management Section of the Division to take a more active role in the digital conversion of existing floodplain mapping, to manage the creation of new detailed and approximate floodplain studies, to become the review authority for FEMA in the Letter of Map Revision process, and to be the lead agency on outreach and management of the overall Map Modernization effort in Indiana. This initiative is in response to FEMA's plans for Map Modernization, which is scheduled for funding at least through federal Fiscal Year 2009. This report also includes funding requirements and a schedule of work for the creation of county-wide Digital Flood Insurance Rate Maps.

## Introduction

The Federal Emergency Management Agency (FEMA), a part of the Department of Homeland Security, is the federal agency responsible for the administration of the National Flood Insurance Program (NFIP) and for the publication of Flood Insurance Rate Maps (FIRM's). As the NFIP has evolved over the last 30 years, modernization and updating of the FIRM's has lagged behind, resulting in a great many maps being out of date and based on technology that is obsolete. To remedy this situation, Congress has appropriated a sum of money towards a plan of FEMA's known as Map Modernization.

The Indiana Department of Natural Resources, through the Division of Water, is the state coordinating agency for the NFIP and has always worked closely with FEMA on both NFIP and floodplain mapping issues. In 2003, FEMA invited and funded interested states to assemble proposals for the states to take over certain portions of the Map Modernization projects that might be in their interest. Since the Division of Water already has the staff capability to produce high quality floodplain mapping, and certain state initiatives are aligned with FEMA's Map Modernization initiatives, this report is the Division's plan for modernizing floodplain mapping for both FEMA and state purposes. This plan articulates the Division's vision for digitally converting existing maps, for creating detailed and approximate studies of floodplains, for managing the Letter of Map Revision (LOMR) process, and for conducting meetings and other outreach activities to the various stakeholders with interests in modernized floodplain mapping. This initial plan is a conceptual plan, and details regarding the actual processes and implementation of these concepts will follow in future documents, contingent on FEMA's approval.

# About the Division of Water

The Indiana Department of Conservation and the Indiana Flood Control and Water Resources Commission merged in 1965 to create the Indiana Department of Natural Resources (DNR). Divisions were subsequently formed within the DNR to address specialized natural resource concerns. Water resource programs of both former agencies were assigned to the Division of Water, reflecting the dual concern for 1) resource evaluation and conservation, and 2) public safety in flood prone areas. The Division of Water tackles diverse responsibilities associated with the evaluation and use of Indiana's most vital natural resource, and development near Indiana's waterways and lakes.

The Division of Water, under the direction of Michael W. Neyer, P.E., is subdivided into five major workgroups.

- The Administration Unit oversees the financial operation of the Division, manages procurement, and performs personnel functions.
- The Environmental Unit determines if regulated man-made projects will have an unreasonable detrimental effect upon fish, wildlife or botanical resources.
- Customer Services / Education Branch staff members focus on public assistance, staff support, and training.
- Technical Services Branch responsibilities are related to the administration of regulatory programs, and water resource evaluations.
- Engineering Services Branch responsibilities focus on floodplain engineering and dam safety assessments.

Each of the three branches (Customer Services / Education, Technical Services, Engineering Services) is further subdivided into separate workgroups called Sections. Each Section has unique expertise and defined responsibilities. A few Sections provide internal services such as computer maintenance and clerical duties; however, most Sections administer Indiana DNR regulatory programs including floodway construction, floodplain development compliance, dam & levee safety compliance, conservancy district activities, and water well construction. The Division of Water endeavors to help the public understand and comply with these regulatory programs.

In addition to serving as a regulatory agency, the Division of Water provides practical water related information including ground water availability throughout Indiana and assistance to Indiana communities participating in the National Flood Insurance Program (NFIP).

The NFIP establishes minimum floodplain management standards. Indiana has established mapping and development criteria that are over and above the minimum established by FEMA. The federal floodplain management statutes state that any regulations adopted by a state or community that are more restrictive shall take precedence over federal minimum standards (44 CFR § 60.1(d)).

Indiana's higher floodplain regulatory standards include:

- Any structure that is to be located in a floodplain area must be protected from flooding to an elevation of two feet above the base flood elevation, unless protected by a Corps of Engineers approved and inspected levee where the standard is one foot.
- Floodways are delineated based on a .1 foot surcharge limit
- The Division of Water must approve any construction activities in the floodway prior to construction
- New residences are not allowed in the floodway (except along the Ohio River)
- The Division of Water must approve all base flood elevations and floodway delineations used for floodplain management purposes.

## The Engineering Services Center

During the reorganization of the Division of Water in 1999, Division leaders recognized one of the weaknesses of the Division was a lack of diverse work opportunities for the various engineering staff. Most engineering positions were assigned to one specific section, and engineers did not have a chance to interact with other staff or expand their expertise. This was causing the Division to lose staff as inequities in work products and expectations varied widely across the Division.

The answer to this dilemma was the creation of the Engineering Services Center (ESC), and the concept of basin teams. Most engineering staff were moved into one large section, and the section then divided into three teams. Each team was assigned a portion of the state based on watersheds (see Figure 1), and engineering tasks that were handled by engineers previously scattered throughout the Division were assigned to the ESC. These day-to-day tasks are managed by the Engineering Section Managers, one for each basin. While the ESC is under the direction of the Engineering Services Branch (led by Kenneth E. Smith, P.E., Assistant Director of the Division), ESC staff works closely with all three branches of the Division, along with many other partners both within the Department and with other agencies, consulting engineers, and the general public.

Another target of the reorganization was an analysis of the work products assigned to ESC, with an eye towards diversifying work for the engineering staff, and reducing inefficiencies in the performance of these tasks. Initiatives that have been undertaken and completed include:

- The creation of the General Guidelines for the Hydrologic – Hydraulic Assessment of Floodplains in Indiana, which provided a guideline for modelers to follow for the successful submission of projects to the Division's office.
- The Hydrologic / Hydraulic Models and Assessments portion of the Division's website, which includes many of the Division's publications online, and has a catalog of previous modeling (including all FIS models) available for download.
- The publication of Natural Resources Commission Information Bulletin #37, (see appendix) which defines the review procedure for submittals to our office.
- The establishment, concurrently with the ESC, of the Technical Services Center (TSC), which has taken on many of the less complex tasks previously performed by engineering staff, but that other qualified staff could perform. The TSC is also set up similarly to ESC in that they are also divided into basin teams.

## Surveying and Mapping Section

The Surveying / Mapping Section provides surveying support for the Division's engineering studies by surveying high water marks, establishing benchmarks, and generating topographic maps. They specialize in obtaining field data (stream cross sections and bridge profiles) for use in hydraulic modeling studies.

## Floodplain Management Section

The Floodplain Management Section is responsible for the administration of the State's participation in the Community Assistance Program-State Support Services Element (CAP-SSSE) in support of the National Flood Insurance Program (NFIP). Under this program, the Section is involved in a wide variety of responsibilities that focus on support for local communities that participate in the NFIP. Typical activities conducted by the Section include:

- Conducting Community Assistance Visits for FEMA. Serving as an in-state point of contact for support of NFIP objectives.
- Reviewing community floodplain ordinances for compliance with federal and state regulations.

- Conducting community outreach activities including annual workshops for training of local floodplain administrators; bi-annual publication of the newsletter "Waterlines"; publishing various educational documents.
- Providing general technical assistance to requests for information or assistance related to the National Flood Insurance Program.
- Assisting with final meetings for publication of floodplain mapping
- Providing assistance to local officials in post-flood recovery efforts in order to ensure compliance with NFIP requirements and to assist in minimizing future flood loss.

In addition the Section conducts outreach activities and training for local officials on state floodplain regulations and assists with monitoring for compliance with the Indiana Flood Control Act and the Indiana Floodplain Management Act in local communities.

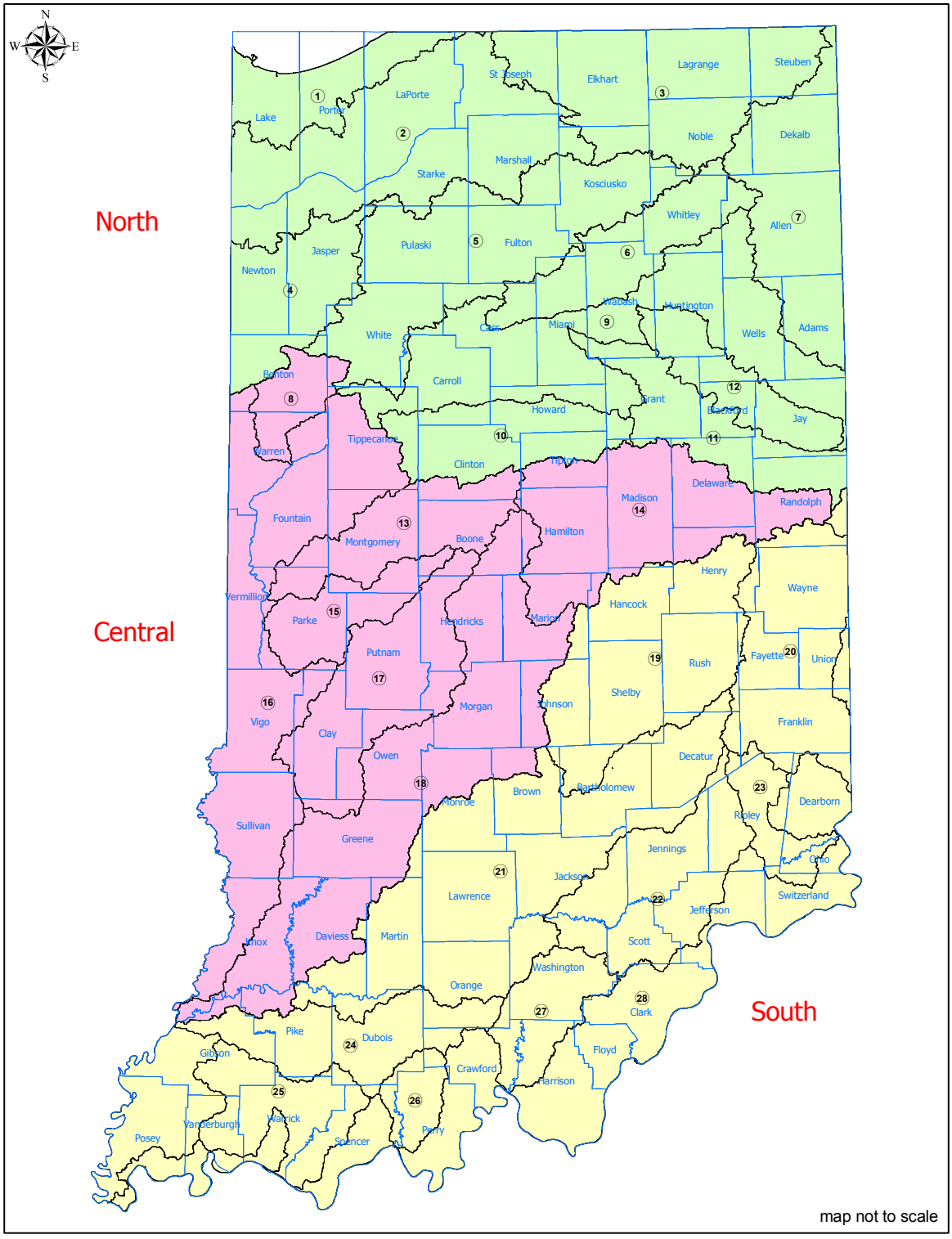


Figure 1: Basin Teams for the Engineering Services Center

# The Indiana Floodplain Mapping Initiative

In conjunction with the goals of both the National Flood Insurance Program and the Indiana Department of Natural Resources, Division of Water, this plan details the creation of the Indiana Floodplain Mapping Initiative, which strives to meet the primary goals of the Map Modernization plan (alternatively known as CAP-MAP) established by FEMA. These goals are:

1. To establish and maintain a premier data collection system
2. To achieve effective program management
3. To build and maintain mutually beneficial partnerships
4. To expand and better inform the user community

These goals are inherent in the four major program areas of the initiative, which are base map data development, floodplain data development, mapping revision support and general program support.

**Base map data development**

The State of Indiana is poised to create a statewide consortium on Geographic Information Systems (GIS). The thought behind this idea would be to have GIS data created on the county level available for general use statewide, and to have data created on a statewide basis available to the counties and communities in the State. Potentially included in this project would be an inventory of base map information for the state of Indiana, and a source for digital base map information for creating DFIRM's. A potential part of this consortium would be the creation of a mechanism for the delivery and storage of GIS data, which the Division would advocate include floodplain mapping data.

While this is not quite a reality yet, staff are hopeful that legislation will come about in 2004 in this regard. The Department is among those agencies spearheading this effort, and the Division has made it known that such an effort would enhance its plan for improving floodplain mapping. The "Indiana Map Prospectus" is one such statewide GIS effort that has been proposed (see appendix). The Divison would anticipate that even if funding and direction for this statewide GIS group does not come from our state legislature, that such a group would come together informally.

A majority of the base mapping information that is available now has been used in the Division's project to digitally convert and rectify floodplain maps. As better base data sources become available, this data would be able to be incorporated into the DFIRM's that are being created.

## Floodplain data development

*Digitizing existing floodplain maps and creation of DFIRM's*: The Division is already underway with a project to digitally convert existing floodplain mapping, through a contract with Prison Enterprises Network (PEN). The first phase of this project is the digital conversion of existing floodplain mapping for 80 counties, rectification of these floodplain themes to USGS Digital Orthophoto Quadrangles, and conversion of this information to DFIRM format. This phase is in progress and is slated for completion in July 2004. The second phase of our project with PEN is the population and attribution of the DFIRM coverages created in the first phase and the creation of "camera ready" DFIRM's (including FIS text) for publication. Staff anticipates the start of the second phase in early 2004.

Creation of these products (the other 12 counties have already been digitally converted by FEMA, or are on schedule to be completed) will put all of the floodplain data for Indiana in one format, which is FEMA compliant and digitally available, and is easily updated and maintained. Entire statewide coverage means that no county is left behind in the process of Map Modernization; no matter how rural a county, they will have improved mapping products, although major updates and revisions will be concentrated in high population and high growth areas.

*Creation of new floodplain studies*: The Division proposes to manage the creation of new studies directly through a Cooperating Technical Partner (CTP) agreement with FEMA. ESC would be responsible for the development of detailed floodway and flood boundary studies for publication in Flood Insurance Studies statewide, with funding through the CTP from FEMA. Staff would also be responsible for the QA/QC of studies that are funded through local CTP agreements, or the Division may contract studies using funding through CTP.

For assistance with these studies, this proposal is for the Department to contract with three Indiana-based engineering consultants, as follows:

- The Division would issue a request for proposal for engineering services, which would run for a set period of time (for example, two years, with a two year extension), but with no set dollar amount (although a cap would be set).
- From responses, staff would select three separate contractors, one working with each basin team.
- Staff would then set the scope with the selected contractor for specific tasks, piece by piece. Tasks could be either performing the studies

(and having the Division QA/QC), or having the consultants QA/QC studies that staff have done.

There are a number of reasons why such a process would be beneficial to the State of Indiana, while also meeting the goals of the NFIP and of Map Modernization.

- One of the problems with the mapping process as it exists now is that FEMA contracts with their consultant (normally based outside of Indiana), but the ESC will do the review and provide most of the comments regarding new studies. Therefore, when problems and concerns arise, the consultant does not have direct guidance from the reviewer in completing the contract, which has caused delays in map production in the past. If the contract is with the Division, the contractor will know up front that they will have to deal with the Division's expectations and follow its standards.
- By keeping the studies in state, the Division would also be developing hydrology & hydraulics expertise in consulting firms within Indiana.
- It is beneficial to have ESC staff involved with both the production of new studies and the QA/QC of studies the Division may contract out. Well rounded staff members that are able to look at studies from both points of view will be more efficient and perform higher quality work than if they were concentrated on one task or the other.

*Refinement / Development of Approximate A Zones*: "Unnumbered" A zones would be developed in rural / low development potential areas by using automated hydrologic & hydraulic methods, with funding through CTP. Existing A zones would be refined on an as-needed basis. The Department may then seek to contract this work out, through perhaps another governmental agency or university.

*General Surveying*: This would include bridge surveys, stream cross section surveys and benchmark establishment for the support of floodplain mapping studies. The Surveying and Mapping Section of the Division of Water is a full function survey unit that has vast experience in performing surveys for Flood Insurance Study work. Therefore, staff would be looking to use CTP monies to fund the tasks of the Surveying and Mapping Section related to floodplain mapping projects.

## Mapping revision support

The Division proposes that the Engineering Services Center serve as the reviewer for applications for Letters of Map Revision (and Conditional Letters

of Map Revision) not only from the state's perspective (which staff already does), but also as the final review for FEMA. Unlike now, the Division would anticipate receiving funding through CAP-MAP or CTP for the performance of this task.

Having final review responsibilities for LOMR's resting with the Division of Water would benefit both the NFIP and the citizens of the State of Indiana in many ways:

- Duplication of time and effort would be eliminated. As part of the Floodplain Management Rules of the State of Indiana, the Division of Water must approve all base flood elevations and floodway delineations used for floodplain management. Therefore, now there are reviews of these applications both at the state and federal level. This is an inefficient use of time and resources that could be applied to other mapping tasks, and would result in more timely LOMR production.
- The ESC has the technical knowledge and capability to perform these tasks, and since staff already has review responsibilities for these products, minimal training would be needed to get the program up and running.
- Many times ESC is reviewing models created for LOMR's not only for that purpose, but also for approval of a State permit for Construction in a Floodway. With all the review being handled completely by the ESC, the requirements for a LOMR can be seamlessly integrated with State requirements.

The Mapping Coordinating Contractor (MCC, now known as the National Service Provider or NSP), who now serves as the final reviewers of LOMR's for FEMA, would still be responsible for processing these letters. Staff works closely with the MCC, and anticipates that this would still be the case. For other map revisions (Letters of Map Amendment and Letters of Map Revision based on Fill), typically these revisions are not impacting the floodway, which is where the jurisdiction of the Department is defined. Therefore, staff would still rely on the new NSP to review and process these types of applications.

## General program support

Under the proposed Indiana Floodplain Mapping Initiative, the Floodplain Management Section would be tasked and funded through CAP-MAP to help support the initiative by taking over the administration of the following activities:

- Taking the lead role in the management of the various grants and contracts including tracking of various monies, accounting procedures, grant administration and contract compliance.
- Taking lead role in conducting Scoping Meetings and Final Meetings in support of mapping projects. The Floodplain Management Section would serve as the main liaison between the local community officials and Engineering Services and would monitor community compliance with necessary floodplain ordinance updates and public notice requirements.
- Providing various outreach activities including informational mailings, preparation of multi-media presentations and other support data as required for the mapping initiative.

# Workflow Analysis for the Engineering Services Center

With the variety of work products in which the ESC is involved, it is necessary to analyze the different tasks that staff are charged with, to determine how much time can be allocated to various tasks. The Division is also in the process of establishing time management software, and therefore will need to define work processes for that effort. Following is a discussion of the various staff work products, and an estimate of time needed for completion of these tasks.

*Stream Permit and Floodplain Analysis / Regulatory Assessment (FARA) Review*

Staff engineers are responsible for the review of submitted modeling in support of an application for construction in a floodway under Indiana Code 14-28-1, and other supporting statutes and rules. This usually involves the review of hydraulic modeling submitted by an engineering firm that would need to demonstrate that a proposed project would not cause the 100-year frequency flood stage to rise more than .14 feet. This may also involve the review of the project description for accuracy and completeness, the review of plans and specifications submitted in support of an application, and general coordination of various other aspects of staff review.

Floodplain Analysis / Regulatory Assessment letters (FARA's, previously known as recommendation letters) are a review of a site for determination of the floodway and base flood elevations, and a summary of the appropriate floodplain management regulations that would apply to construction activities for the site. These letters are generally requested by the site developer, landowner, or other interested party at the request of the local floodplain manager, who is required by their local floodplain ordinance to have a determination from the Division for a floodplain that does not have a detailed study. However, it will be the requestor's burden to have such a study performed.

The review by ESC of submittals for either a Stream Permit or for a FARA is governed by the procedure set out in the Natural Resources Commission Information Bulletin #37 (see appendix). This procedure includes the following details:

- Modeling will be performed based on the IDNR document General Guidelines for the Hydrologic – Hydraulic Assessment of Floodplains in Indiana.
- Modeling will not be reviewed unless the submittal includes a completed modeling checklist and a completed project evaluation table (if necessary).

- ESC staff will only review modeling twice, and if the models are not acceptable, the application will be denied.

*Dam Safety*

ESC staff is responsible for the review of a permit application or an early coordination request for the evaluation of the safety of an existing or proposed dam. ESC focuses on the hydrologic and hydraulic aspects of these reviews, including a determination of spillway capacity and, in some cases, the review of a dam breach model. In 2000, the DNR was allocated a sum of $10 million to study and repair dams owned by the Department. ESC is working with consulting engineers hired to undertake these studies, and will be responsible for reviewing and approving the hydrologic and hydraulic aspects of these studies.

*Letter of Map Revision (LOMR)*

A Letter of Map Revision (LOMR) is a request to the Federal Emergency Management Agency (FEMA) to change base flood elevations and floodway limits that are published on the Flood Insurance Rate Maps (FIRM's). Since determinations and delineations of floodway and flood fringe areas are subject to Department approval, the Division is obligated to review and approve these requests.

In the past, these applications have been reviewed by both the Division (through ESC) and by FEMA (by the MCC). This duplicate review is redundant and inefficient. This plan introduces the concept of the Division being the sole reviewer of LOMR's that are in its jurisdiction, with FEMA funding the Division for this service.

*FEMA Flood Insurance Study / DFIRM production*

With the advent of Map Modernization and the realization of significant funding for this program, the way that Flood Insurance Studies are created is undergoing a dramatic shift. The ESC has traditionally had a role in these studies in that staff has been the main reviewer of FEMA contracted studies, and have created a number of in-house studies for publication.

This plan introduces the concept of the Division taking a larger role in the review and completion of Flood Insurance Studies. Staff proposes contracting for these studies through a Cooperating Technical Partner (CTP) agreement with FEMA. The Division has instituted a procedure for digital conversion of existing maps and eventual conversion to a DFIRM product through a contract with Prison Enterprises Network. Staff has a plan for contracting of new studies by the state to various consulting firms within the

state. The Division also has as part of this plan for ESC to perform detailed studies for publication in Flood Insurance Studies.

ESC staff is also responsible for the review of (or the performance of) a hydrologic analysis for publication of discharge - drainage area curves for a particular watershed, often in conjunction with the Flood Insurance Study review. The resulting discharge – drainage area curves are then sent to the U. S. Geological Survey, the Corps of Engineers and the Natural Resources Conservation Service, per a Memorandum of Agreement dated May 6, 1976. Once these agencies have given their concurrence to the curves, they are published in the document "Coordinated Discharges of Selected Streams in Indiana", and are used by all agencies.

*County Surveyor Drainage Review (Senate Enrolled Act 368)*

A newer role for the ESC is serving as a facilitator in an application process for county drainage projects. The ESC's role in this process is to facilitate dialog between county surveyors and various environmental agencies (the Indiana Department of Environmental Management, the Division's Environmental Unit, the Division of Soil Conservation, etc.) to come to a consensus on project scopes and limits that are acceptable to both parties. This entails a meeting on site to review the proposed project, and for all parties to agree on conditions for the project.

*Violations and Enforcement*

The ESC does perform a limited role in supporting the Division's compliance activity related to the investigation of potential violations of the Flood Control Act. The ESC will perform limited modeling to determine floodway limits for potential violation sites, if warranted. ESC staff has also served as expert witnesses in court proceedings regarding compliance matters.

*Other duties*

Other duties the ESC is involved with are flood response and recovery (Indiana had two federally declared flooding related disasters in 2003), reviewing water use / water supply studies, support of conservancy district, basin commission and lake management issues, and other special projects that may come up from time to time.

## ESC task allocation

As of the start of 2004, the Engineering Services Center has the following staff assignments (see Table 1):

| ES North Basin Section | ES Central Basin Section | ES South Basin Section |
|---|---|---|
| | | |
| Rajindra Gosine, PE, LPG | David Knipe, PE, CFM | Suzanne Delay, PE |
| Mindy Fultz | Dennis Stewart, PE, PH | Ali Shaikh |
| Darrin Miller | Steve Bradley | Eric Moster |
| Dustin Thurston | Jim Wertz | Bob Page |
| Vacant | Vacant | Vacant |
| | Vacant (unfunded) | Vacant (unfunded) |

Table 1: ESC staff assignments

Of the vacant positions, the Division is currently considering candidates for two of these positions, accepting applications for one position, and two others are not funded at this time. The Division proposes to obtain permission to hire the unfunded positions at this time, balancing the cost of these positions with partial funding of the entire ESC with FEMA CAP-MAP and CTP grant monies. The Division does not want to specifically fund "dedicated" positions with FEMA funds, since this will run counter to the goals of the ESC, which is to encourage diversity in work assignments. Having all staff members trained and able to do a variety of tasks will allow for flexibility and adaptability for the entire work unit.

With 14 staff level positions, an analysis of time available for various tasks is as follows. This is based on 48 weeks of work per year accounting holidays, vacation, sick and personal time. (Section managers are not included in this analysis):

| Tasks | Estimated Percentage | Estimated Staff Hours |
|---|---|---|
| FARA / Permit | 20% | 5040 |
| SEA 368 | 5% | 1260 |
| Dams | 10% | 2520 |
| Compliance and Enforcement | 5% | 1260 |
| Other Duties | 10% | 2520 |
| LOMR | 10% | 2520 |
| FIS / FBFM studies | 40% | 10080 |
| | 100% | 25200 |

Table 2: Time allocation for ESC Staff

## Time Tracking and reporting

The Division of Water is initiating a plan for time tracking throughout the Division by using an application developed by the Division of Fish and Wildlife. This initiative fits in with the goals of this plan, since time will have to be tracked for each of the processes staff proposes to be working on. Since time spent on FEMA work (FIS and LOMR) will need to be tracked and monitored by the ESC section managers, this tool will be a critical piece of the implementation of this plan.

The ESC section managers will be reporting the results from this database on a monthly basis (reports due on the 5$^{th}$ of each month) regarding the amount of time spent on each task, and how much time each staff member is credited to each work plan. The amount of time spent on federal obligations will also be reported, with the expectation that time spent on these tasks will be reimbursed through the CTP or CAP MAP programs.

In addition, FEMA (through their National Service Provider) is developing a web based tool for the planning and tracking of CTP and CAP MAP activities. This tool will be made available to all of FEMA's partners, and would be updated by Division staff on an ongoing basis.

## Prioritization of Counties for DFIRM conversion

The previous Map Modernization plan developed by FEMA and the Division published in 2002 (see appendix) identified priorities by county, based on a consensus between FEMA and Division goals. Since these goals have shifted over time, these priorities have also had to be adjusted slightly. Included in the appendix is a list of priorities of each county, and an estimate of which fiscal year a revised DFIRM product would be produced. The Division anticipates that much of the data compilation and graphical work would be done through its partnership with PEN Products, in many cases well ahead of the date a study may be initiated.

As part of this plan, staff has developed a prioritization of county DFIRM production, and an estimated year (federal fiscal year) that a county will be converted. These estimated time frames are based on the following constraints:

- Set schedules for FY03 and FY04
- A constant set of funding for 5 years (FY05 – FY09)
- Meeting FEMA's goals on percentage of population served by each fiscal year (population with digital data and population with effective maps)
- FEMA's "decile" count, based on priorities for the entire country

- Not overloading one basin team in a given year
- Panel Count is based on a study by PBS & J (for FEMA)

Tables 3 and 4 and Figures 2 and 3 depict the results of this analysis for the entire state. This determination should only be taken as a preliminary analysis, for many other factors that were not considered in this analysis should be taken into account, including:

- CTP agreements with local communities – if a local community is willing to provide resources and data to help the mapping process, then priority should be given to those communities.
- The IDNR digital conversion project – the Division's timelines will be much more aggressive than FEMA's, since it is not planning wide scale redelinations. If there are counties where redelinations aren't necessary (or would be minor in scope), then Division data can still be used as a base for refinement of flood zones.
- Costs are based on digital conversion only, and that estimate is based on $6,750 per panel, from the 2002 Map Modernization study. Staff expects its product to be much cheaper than that, and plan to apply any savings to detailed studies.
- Detailed studies that may exist or that may be planned by IDNR are also not taken into account. Staff plans to make an effort to incorporate any detailed study at the time of conversion, but the process of conversion will expedite the incorporation of detailed studies into the DFIRM at a later date.

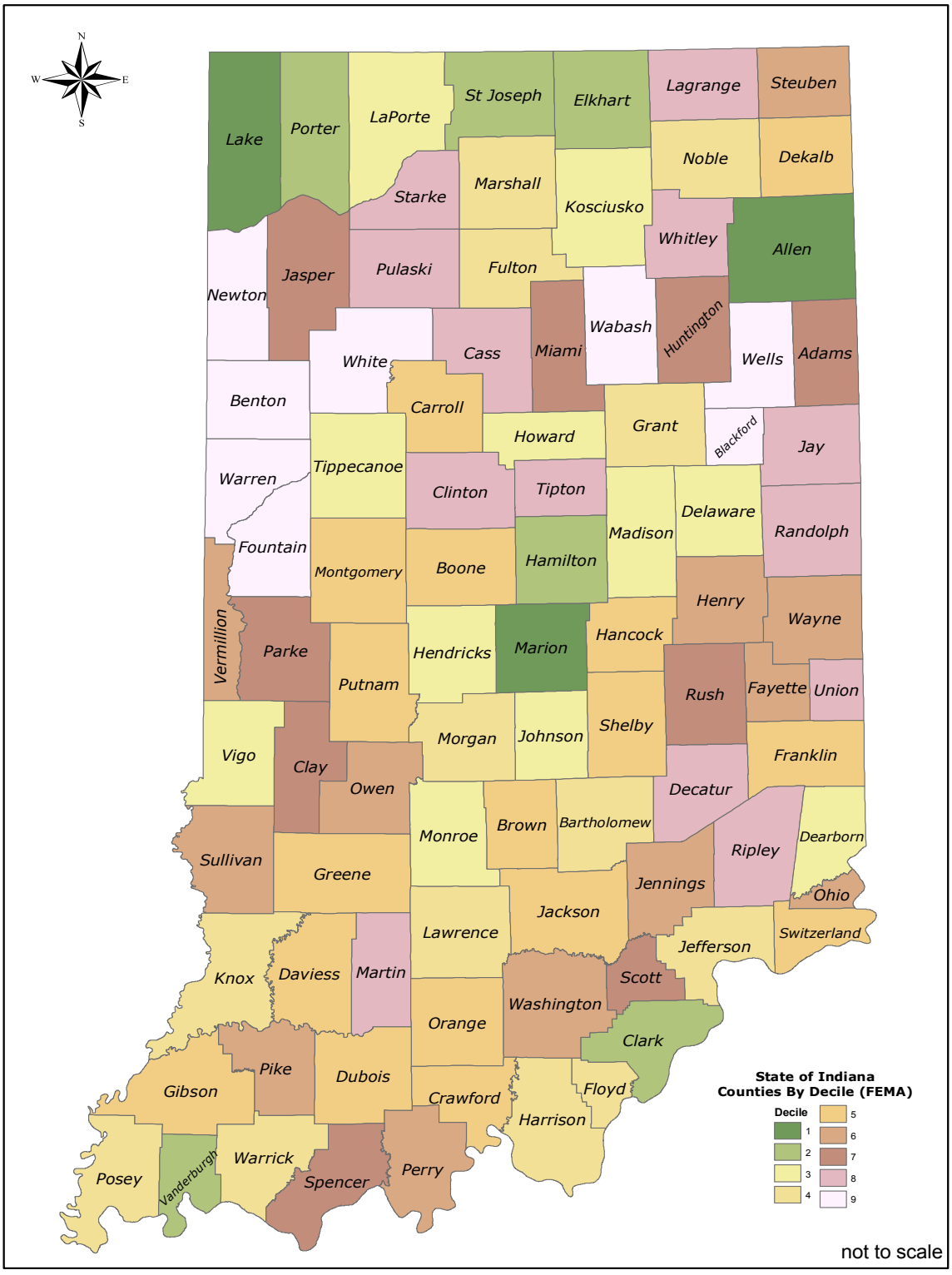


Figure 2: Distribution of Counties in Indiana by FEMA Decile

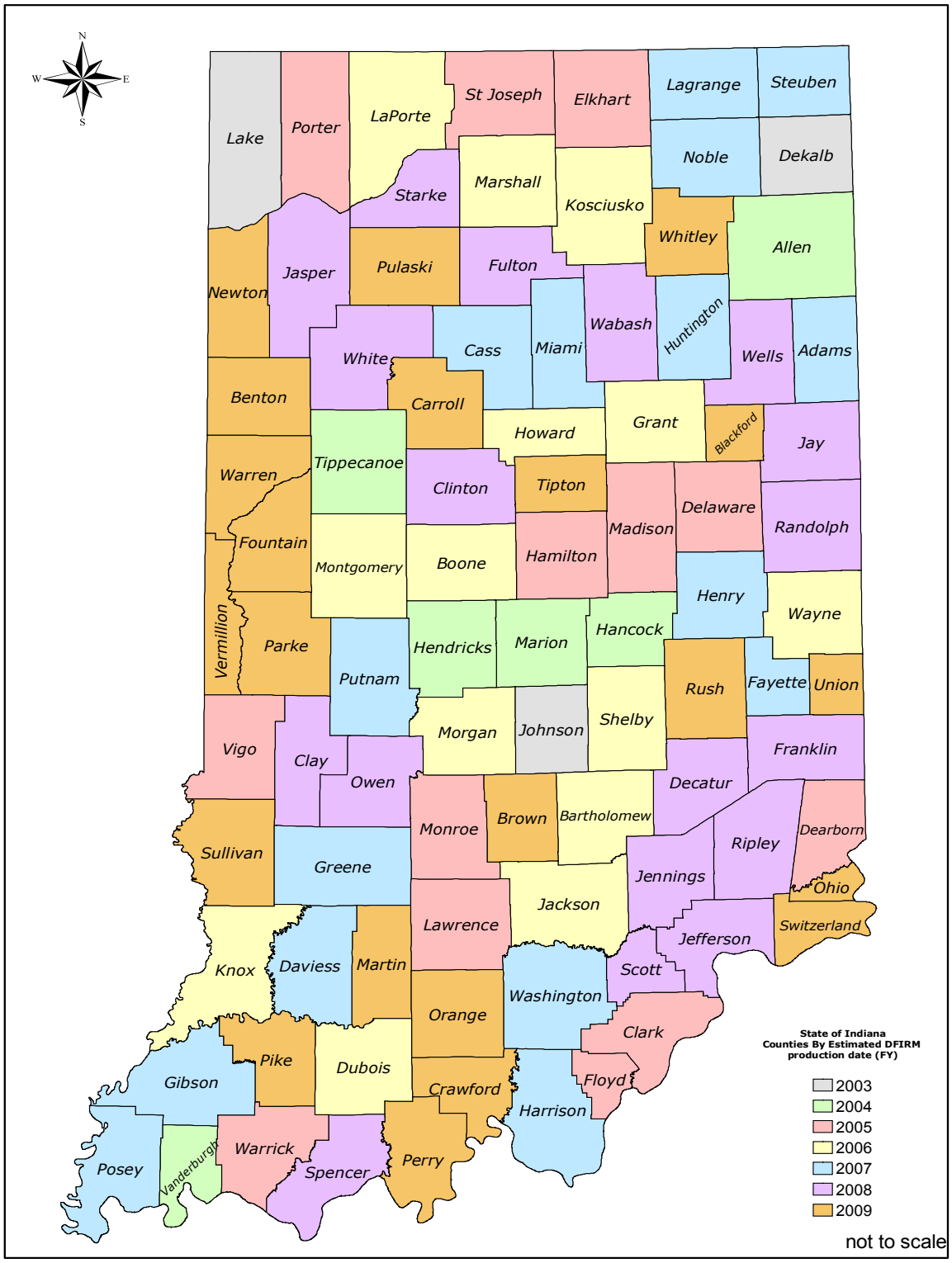


Figure 3: Distribution of Counties in Indiana by proposed DFIRM revision date

Panels by Basin

| FY | Panels | | North | Central | South |
|---|---|---|---|---|---|
| 2003 | 279 | | 192 | 38 | 49 |
| 2004 | 575 | | 168 | 284 | 123 |
| 2005 | 976 | | 338 | 327 | 311 |
| 2006 | 973 | | 382 | 282 | 309 |
| 2007 | 992 | | 393 | 231 | 368 |
| 2008 | 955 | | 453 | 146 | 356 |
| 2009 | 936 | | 286 | 366 | 284 |

| FY | % | | % | % | % |
|---|---|---|---|---|---|
| 2003 | 4.9% | | 68.8% | 13.6% | 17.6% |
| 2004 | 10.1% | | 29.2% | 49.4% | 21.4% |
| 2005 | 17.2% | | 34.6% | 33.5% | 31.9% |
| 2006 | 17.1% | | 39.3% | 29.0% | 31.8% |
| 2007 | 17.4% | | 39.6% | 23.3% | 37.1% |
| 2008 | 16.8% | | 47.4% | 15.3% | 37.3% |
| 2009 | 16.5% | | 30.6% | 39.1% | 30.3% |

Panels by Population

| | | | FEMA Goals | |
|---|---|---|---|---|
| FY | population | %population | OnLine | DFIRMs |
| 2003 | 629721 | 10.6% | | |
| 2004 | 1590808 | 37.4% | 10 | 20 |
| 2005 | 1531161 | 63.2% | 20 | 50 |
| 2006 | 836166 | 77.3% | 35 | 65 |
| 2007 | 548032 | 86.5% | 50 | 75 |
| 2008 | 471918 | 94.5% | 70 | 85 |
| 2009 | 329176 | 100.0% | 90 | 100 |

Panels by Cost

| FY | Panels | Cost* |
|---|---|---|
| 2003 | 279 | $1,883,250 |
| 2004 | 575 | $3,881,250 |
| 2005 | 976 | $6,588,000 |
| 2006 | 973 | $6,567,750 |
| 2007 | 992 | $6,696,000 |
| 2008 | 955 | $6,446,250 |
| 2009 | 936 | $6,318,000 |

* Cost based on a unit price of $6,750 per panel

Table 3: Yearly breakdowns by Basin, Population and Cost

| Number | County | Decile | POP1999 | Status | Number | County | Decile | POP1999 | Status |
|---|---|---|---|---|---|---|---|---|---|
| 45 | Lake County | 1 | 477958 | 2003 | 26 | Gibson County | 5 | 32231 | 2007 |
| 41 | Johnson County | 3 | 111950 | 2003 | 76 | Steuben County | 6 | 32082 | 2007 |
| 15 | De Kalb County | 5 | 39813 | 2003 | 14 | Daviess County | 5 | 29148 | 2007 |
| 49 | Marion County | 1 | 812595 | 2004 | 88 | Washington County | 6 | 28561 | 2007 |
| 2 | Allen County | 1 | 316439 | 2004 | 65 | Posey County | 4 | 26563 | 2007 |
| 82 | Vanderburgh County | 2 | 168050 | 2004 | 21 | Fayette County | 6 | 25872 | 2007 |
| 79 | Tippecanoe County | 3 | 139849 | 2004 | 85 | Wabash County | 9 | 34473 | 2008 |
| 32 | Hendricks County | 3 | 98094 | 2004 | 12 | Clinton County | 8 | 33419 | 2008 |
| 30 | Hancock County | 5 | 55781 | 2004 | 39 | Jefferson County | 4 | 31647 | 2008 |
| 71 | Saint Joseph County | 2 | 258475 | 2005 | 37 | Jasper County | 7 | 29749 | 2008 |
| 20 | Elkhart County | 2 | 174242 | 2005 | 40 | Jennings County | 6 | 28388 | 2008 |
| 29 | Hamilton County | 2 | 170114 | 2005 | 68 | Randolph County | 8 | 27712 | 2008 |
| 64 | Porter County | 2 | 147535 | 2005 | 69 | Ripley County | 8 | 27359 | 2008 |
| 48 | Madison County | 3 | 130924 | 2005 | 90 | Wells County | 9 | 26968 | 2008 |
| 18 | Delaware County | 3 | 116105 | 2005 | 11 | Clay County | 7 | 26770 | 2008 |
| 53 | Monroe County | 3 | 115631 | 2005 | 17 | Decatur County | 8 | 25778 | 2008 |
| 84 | Vigo County | 3 | 104453 | 2005 | 91 | White County | 9 | 25597 | 2008 |
| 10 | Clark County | 2 | 94575 | 2005 | 75 | Starke County | 8 | 24380 | 2008 |
| 22 | Floyd County | 4 | 72655 | 2005 | 72 | Scott County | 7 | 23111 | 2008 |
| 87 | Warrick County | 4 | 52393 | 2005 | 24 | Franklin County | 5 | 22101 | 2008 |
| 16 | Dearborn County | 3 | 48240 | 2005 | 38 | Jay County | 8 | 21750 | 2008 |
| 47 | Lawrence County | 4 | 45819 | 2005 | 74 | Spencer County | 7 | 21178 | 2008 |
| 46 | Laporte County | 3 | 109403 | 2006 | 25 | Fulton County | 4 | 20869 | 2008 |
| 34 | Howard County | 3 | 83417 | 2006 | 60 | Owen County | 6 | 20669 | 2008 |
| 27 | Grant County | 4 | 72265 | 2006 | 92 | Whitley County | 8 | 30834 | 2009 |
| 43 | Kosciusko County | 3 | 71935 | 2006 | 8 | Carroll County | 5 | 20159 | 2009 |
| 89 | Wayne County | 6 | 70993 | 2006 | 59 | Orange County | 5 | 19821 | 2009 |
| 3 | Bartholomew County | 4 | 70179 | 2006 | 62 | Perry County | 6 | 19411 | 2009 |
| 55 | Morgan County | 4 | 66726 | 2006 | 77 | Sullivan County | 6 | 19205 | 2009 |
| 50 | Marshall County | 4 | 45683 | 2006 | 23 | Fountain County | 9 | 18453 | 2009 |
| 6 | Boone County | 5 | 44613 | 2006 | 70 | Rush County | 7 | 18286 | 2009 |
| 73 | Shelby County | 5 | 43883 | 2006 | 83 | Vermillion County | 6 | 16922 | 2009 |
| 36 | Jackson County | 5 | 41228 | 2006 | 61 | Parke County | 7 | 16884 | 2009 |
| 19 | Dubois County | 5 | 40069 | 2006 | 80 | Tipton County | 8 | 16878 | 2009 |
| 42 | Knox County | 4 | 39351 | 2006 | 7 | Brown County | 5 | 16303 | 2009 |
| 54 | Montgomery County | 5 | 36421 | 2006 | 56 | Newton County | 9 | 14833 | 2009 |
| 33 | Henry County | 6 | 48711 | 2007 | 5 | Blackford County | 9 | 13853 | 2009 |
| 57 | Noble County | 4 | 43260 | 2007 | 66 | Pulaski County | 8 | 13296 | 2009 |
| 9 | Cass County | 8 | 38777 | 2007 | 63 | Pike County | 6 | 13001 | 2009 |
| 35 | Huntington County | 7 | 37393 | 2007 | 13 | Crawford County | 5 | 10678 | 2009 |
| 31 | Harrison County | 4 | 35446 | 2007 | 51 | Martin County | 8 | 10523 | 2009 |
| 67 | Putnam County | 5 | 34939 | 2007 | 4 | Benton County | 9 | 9772 | 2009 |
| 44 | Lagrange County | 8 | 34032 | 2007 | 78 | Switzerland County | 5 | 9108 | 2009 |
| 52 | Miami County | 7 | 33909 | 2007 | 86 | Warren County | 9 | 8300 | 2009 |
| 28 | Greene County | 5 | 33777 | 2007 | 81 | Union County | 8 | 7239 | 2009 |
| 1 | Adams County | 7 | 33331 | 2007 | 58 | Ohio County | 6 | 5417 | 2009 |

Table 4: Indiana Counties and estimated year of DFIRM production

## Conclusion

This is the Indiana Department of Natural Resources conceptual proposal for the funding of NFIP mapping tasks for the purpose of modernizing and updating floodplain mapping. By having the Engineering Services Center and the Floodplain Management Section of the Division of Water assume responsibility for the digital conversion of floodplain mapping, for the creation of new floodplain mapping studies, and for managing the map revision process, these tasks can be completed concurrently and expediently. Both state and federal goals for revising floodplain mapping are addressed by this plan. The Division of Water, Department of Natural Resources is excited about the opportunities that exist in this plan, and is looking forward to a beneficial partnership with FEMA and with other stakeholders in the common goals to update and modernize floodplain mapping.

## Appendices

Map Modernization plan for the State of Indiana, 2002
Indiana Map Prospectus
Natural Resources Commission Bulletin #37
Division of Water Organization Chart
Details on Time Tracking software application

# Map Modernization Plan for

# State of Indiana

**Prepared by:**

Indiana Department of Natural Resources
Division of Water
Indianapolis, Indiana
and
Dewberry & Davis LLC

**August 2002**

### *Executive Summary*

The proposed mapping plan meets FEMA's Government Performance and Results Act (GPRA) goals, as follows:

1. The average age of the maps in Indiana will be reduced to 5.8 years by the end of Fiscal Year (FY) 2006 with only FY 2003 funding;

2. Over half (55.4%) of the State's unmapped communities will receive maps;

3. Fifteen percent of the State's highest priority mapping needs will receive new detailed hydrologic and hydraulic analyses; and

4. State and non-FEMA cost share (including in-kind contributions) will reach 20%.

The total cost of the plan is approximately $7.1 million. The FEMA share is $5.9 million.

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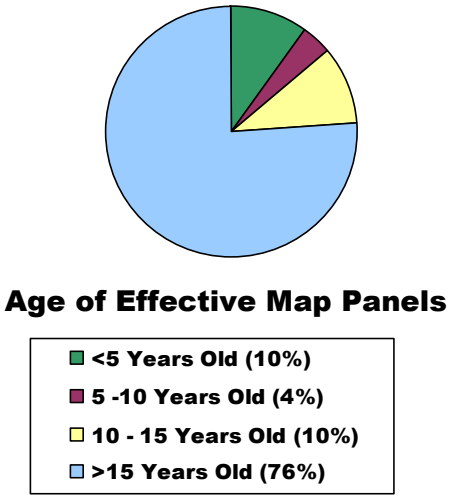
## Appendices

### *Background and Purpose of Plan*

The Federal Emergency Management Agency's (FEMA's) flood hazard maps are essential tools for flood hazard mitigation in Indiana and in the United States in general. As shown in the figure below, most of the flood hazard maps in Indiana have become outdated.




In many cases, the older maps reflect outdated flood hazard information that limits their utility for insurance and floodplain management purposes. Additionally, most of the maps were prepared using now outdated road network information and manual cartographic techniques, which make the maps difficult for State and local customers to use and expensive for FEMA and the Indiana to maintain. In addition, FEMA has estimated that there are 195 communities in Indiana where flood hazard maps have not been produced**.**

To address this problem, the President's budget for Fiscal Year (FY) 2003 (which starts on October 1, 2002) includes $351 million for initiating FEMA's national Map Modernization Program. Similar funding levels are proposed for subsequent fiscal years.

This Plan was prepared to assist FEMA in the development of regional and national plans for implementing the FEMA Map Modernization Program. This Plan summarizes the role that Indiana will play in completing the required mapping activities and how these activities will be managed and performed. This Plan identifies mapping priorities, explains how mapping priorities were established for each county in Indiana**,** and outlines an approach for addressing these mapping priorities.

In accordance with Government Performance and Results Act (GPRA) performance measures suggested for the Map Modernization Program by the Office of Management and Budget, the details of this Plan have been developed with consideration given to FEMA accomplishing the following nationwide goals:

- Reducing the average age of the flood maps nationwide from over 14 years to 6 years or less;
- Producing digital flood hazard maps with up-to-date flood hazard data for the 15-percent highest priority areas; and

- Developing flood hazard maps for one-half of the unmapped, floodprone communities.

### *State Role in the Flood Hazard Mapping Program*

The State of Indiana plans to assist in the Flood Hazard Mapping Program in a Mid-Level Participation as defined below.

*Mid-Level Participation*—The State will perform a majority of the mapping needs assessments and assist with outreach and community coordination on mapping projects. However, the State will not manage or perform any flood mapping activities. All mapping activities will be managed by the Regional Office based on input provided by the state.

The Indiana Department of Natural Resources, Division of Water (IDNR), the State's National Flood Insurance Program (NFIP) coordinating agency, will take the lead in the State of Indiana for the floodplain mapping program. The Fiscal Year (FY) 2003 plan will be managed by the FEMA Region V office and will rely primarily on a mix of local and regional government agencies through the Cooperating Technical Partners (CTP) program, IDIQ study contracts, and Flood Map Production Coordination Contractor (MCC) work. IDNR will assist throughout via input in the scoping process, by supplying data, assisting with outreach activities, establishing State-specific engineering and mapping standards, reviewing the preliminary map products, etc.

There are existing CTP agreements with the City of Indianapolis and Maumee River Basin Commission (MRBC). The MRBC has jurisdiction over all or part of five counties (Noble, Steuben, Allen, Adams, and DeKalb). In addition, preliminary negotiations for CTP agreements have taken place with Porter, Tippecanoe, Boone, Madison, Bartholomew, and Shelby Counties.

### *Mapping Needs Assessment and Priority Setting Approach*

The IDNR, Division of Water, performed an internal analysis of counties in Indiana to determine candidates for restudy priorities. This analysis consisted of ranking counties based on:

- Population
- Number of flood insurance policies in the county
- Number of Construction in a Floodway permit applications the Division had received over the last year (2001)
- Number of requests for "Floodplain Analysis and Regulatory Assessment" letters the Division had received over the last year (2001)
- Age of the maps for the county

Also taken into account for FY 2003 priorities was choosing an equal number of counties in each of the three IDNR basin teams (North, Central, and South) so that one basin team would not be overburdened with restudy commitments.

The IDNR, with the support of one of the MCCs, conducted telephone interviews with 37 communities. Copies of the documents used for the data collection and outreach activities (e.g., questionnaires) are included in Appendix A. (These telephone interviews were continuing at the time of the preparation of this report.)

The State of Indiana has a good grasp of its mapping needs because (1) they have an active floodway construction permit program, (2) they take a lead on their NFIP Community Assistance Visits, and (3) they have a state association for floodplain management.

A complete listing of the MNUSS data collected for Indiana is provided in Appendix B.

Upon completion of the mapping needs assessment, the IDNR ranked each county to determine the order in which the counties' mapping needs should be addressed. Priority was given to (1) Lake County (because of its proximity to Chicago with its ongoing high level of development, and because there is an ongoing U.S. Army Corps of Engineers [USACE] project), (2) existing CTPs (City of Indianapolis and MRBC), (3) potential CTPs, (4) Indianapolis metropolitan area counties, (5) Ohio River counties, and (6) counties with the oldest maps in the State. The results of the ranking and priority-setting process are summarized in Table 1.

The resulting plan achieves the GPRA goal of reducing the age of the maps to 5.8 years and provides maps for 55% of the unmapped communities in Indiana.

### *Proposed Approach to Addressing Mapping Needs*

To address the prioritized mapping needs, the IDNR evaluated the map production options that are available. For the purposes of this Plan, the options have been categorized as Level 1 Map Upgrades and Level 2 Map Upgrades. A brief description of each is provided below.

- Level 1 Map Upgrades: Level 1 Map Upgrades are improvements to existing flood maps that do not include significant changes to Base Flood Elevations (BFEs). These improvements may include converting the flood maps to a GIS-based digital format (or upgrading to current digital FIRM standards if already in old digital FIRM format), development of a standard DFIRM database, incorporating an improved base map (such as digital orthophoto quarter quadrangles), redelineating existing floodplain boundaries based on updated topographic data, refinement or addition of Zone A, and correction of mismatches in flood hazard information (floodplains, floodways, BFEs) across community and county borders..

- Level 2 Map Upgrades: Level 2 Map Upgrades include all of the features of Level 1 Upgrades plus include significant changes to BFEs. Significant changes to BFEs can result from revisions to existing BFEs or establishing new BFEs in areas that were unstudied or approximately studied. They can be based on a new detailed restudy performed by a Mapping Partner or an existing data source, such as an old U.S. Army Corps of Engineers floodplain information report (commonly referred to as an Existing Data Study or "XDS"). These upgrades typically require updated topographic data, structure and cross-section surveys, hydrologic and hydraulic engineering analyses, and floodway and floodplain boundary delineation.

The costs associated with Level 2 map upgrades typically will be significantly higher than the costs associated with Level 1map upgrades.

The IDNR then evaluated various scenarios to determine the best combination of the above activities to achieve the GPRA performance measures. Based on this evaluation, the IDNR submitted the highest priority recommendations shown in Table 1 to FEMA. For the purposes of this plan, the IDNR assumes that the 15% highest priority mapping needs in the State are met under this plan.

**Table 1 – Map Production Summary for FY 2003 Funding**

| County | Planned Community Upgrades | | | | |
|---|---|---|---|---|---|
| | Level of Upgrade | No. of Communities | No. of Panels | Average Age of Maps by FY 2006 | Unmapped Communities To Be Mapped by FY 2006 |
| Bartholomew | 1 | | 32 | | |
| | 2 | | 11 | | |
| | Total | 7 | 43 | 0.5 | 4 |
| Benton | 1 | | 20 | | |
| | 2 | | 0 | | |
| | Total | 6 | 20 | 0.5 | 5 |
| Boone | 1 | | 33 | | |
| | 2 | | 12 | | |
| | Total | 4 | 45 | 0.5 | 0 |
| Cass | 1 | | 21 | | |
| | 2 | | 0 | | |
| | Total | 3 | 21 | 0.5 | 1 |
| Clark | 1 | | 26 | | |
| | 2 | | 0 | | |
| | Total | 7 | 26 | 0.5 | |
| Clay | 1 | | 15 | | |
| | 2 | | 0 | | |
| | Total | 8 | 15 | 0.5 | 7 |
| Crawford | 1 | | 25 | | |
| | 2 | | 0 | | |
| | Total | 7 | 25 | 0.5 | 1 |
| Daviess | 1 | | 23 | | |
| | 2 | | 0 | | |
| | Total | 6 | 23 | 0.5 | 4 |
| Dearborn | 1 | | 21 | | |
| | 2 | | 0 | | |
| | Total | 8 | 21 | 0.5 | 3 |
| Dubois | 1 | | 40 | | |
| | 2 | | 0 | | |
| | Total | 6 | 40 | 0.5 | 2 |
| Floyd | 1 | | 28 | | |
| | 2 | | 0 | | |
| | Total | 3 | 28 | 0.5 | 0 |
| Gibson | 1 | | 26 | | |
| | 2 | | 0 | | |
| | Total | 11 | 26 | 0.5 | 6 |

| County | Planned Community Upgrades | | | Average Age of Maps by FY 2006 | Unmapped Communities To Be Mapped by FY 2006 |
|---|---|---|---|---|---|
| | Level of Upgrade | No. of Communities | No. of Panels | | |
| Greene | 1 | | 22 | | |
| | 2 | | 0 | | |
| | Total | 7 | 22 | 0.5 | 3 |
| Hancock | 1 | | 48 | | |
| | 2 | | 0 | | |
| | Total | 6 | 48 | 0.5 | 3 |
| Harrison | 1 | | 34 | | |
| | 2 | | 0 | | |
| | Total | 10 | 34 | 0.5 | 4 |
| Hendricks | 1 | | 56 | | |
| | 2 | | 0 | | |
| | Total | 10 | 56 | 0.5 | 6 |
| Jay | 1 | | 20 | | |
| | 2 | | 0 | | |
| | Total | 6 | 20 | 0.5 | 3 |
| Jefferson | 1 | | 50 | | |
| | 2 | | 0 | | |
| | Total | 4 | 50 | 0.5 | 0 |
| Johnson | 1 | | 51 | | |
| | 2 | | 0 | | |
| | Total | 8 | 51 | 0.5 | 1 |
| Lake | 1 | | 96 | | |
| | 2 | | 0 | | |
| | Total | 20 | 96 | 0.5 | 1 |
| Madison | 1 | | 30 | | |
| | 2 | | 10 | | |
| | Total | 12 | 40 | 0.5 | 4 |
| Marion | 1 | | 96 | | |
| | 2 | | 0 | | |
| | Total | 15 | 96 | 0.5 | 13 |
| Noble | 1 | | 52 | | |
| | 2 | | 0 | | |
| | Total | 7 | 52 | 0.5 | 3 |
| Ohio | 1 | | 8 | | |
| | 2 | | 0 | | |
| | Total | 2 | 8 | 0.5 | 0 |
| Orange | 1 | | 18 | | |
| | 2 | | 0 | | |
| | Total | 4 | 18 | 0.5 | 0 |

| County | Planned Community Upgrades | | | Average Age of Maps by FY 2006 | Unmapped Communities To Be Mapped by FY 2006 |
|---|---|---|---|---|---|
| | Level of Upgrade | No. of Communities | No. of Panels | | |
| Parke | 1 | | 23 | | |
| | 2 | | 0 | | |
| | Total | 7 | 23 | 0.5 | 3 |
| Perry | 1 | | 21 | | |
| | 2 | | 0 | | |
| | Total | 4 | 21 | 0.5 | 0 |
| Porter | 1 | | 36 | | |
| | 2 | | 12 | | |
| | Total | 12 | 48 | 0.5 | 1 |
| Posey | 1 | | 20 | | |
| | 2 | | 0 | | |
| | Total | 5 | 20 | 0.5 | 2 |
| Shelby | 1 | | 31 | | |
| | 2 | | 11 | | |
| | Total | 3 | 42 | 0.5 | 1 |
| Spencer | 1 | | 20 | | |
| | 2 | | 0 | | |
| | Total | 7 | 20 | 0.5 | 3 |
| Steuben | 1 | | 15 | | |
| | 2 | | 0 | | |
| | Total | 6 | 15 | 0.5 | 2 |
| Sullivan | 1 | | 25 | | |
| | 2 | | 0 | | |
| | Total | 7 | 25 | 0.5 | 6 |
| Switzerland | 1 | | 20 | | |
| | 2 | | 0 | | |
| | Total | 3 | 20 | 0.5 | 0 |
| Tippecanoe | 1 | | 33 | | |
| | 2 | | 11 | | |
| | Total | 7 | 44 | 0.5 | 3 |
| Warrick | 1 | | 26 | | |
| | 2 | | 0 | | |
| | Total | 6 | 26 | 0.5 | 1 |
| Washington | 1 | | 24 | | |
| | 2 | | 0 | | |
| | Total | 7 | 24 | 0.5 | 3 |

| County | Planned Community Upgrades | | | Average Age of Maps by FY 2006 | Unmapped Communities To Be Mapped by FY 2006 |
|---|---|---|---|---|---|
| | Level of Upgrade | No. of Communities | No. of Panels | | |
| **Total** | 1 | | 1185 | | |
| | 2 | | 67 | | |
| | Total | 261 | 1252 | 5.8 | 99 |
| Total (Including Studies in Progress) | 1 | | 1420 | | |
| | 2 | | 67 | | |
| | Total | 296 | 1487 | 5.8 | 108 |

### *Proposed Approach To Map Production*

To achieve GPRA goals for the State of Indiana, a total of 36 digital countywides resulting in 1,252 panels will need to be produced. The required number of panels was estimated in two steps, as follows:

(1) Dewberry & Davis LLC developed a spreadsheet tool called Mapping Project Planner (MP2). This tool was designed to perform many tasks, including determining the panel count based on percentages of various scale panels required for future level 1 upgrades. As an example, for Clark County, IN, MP2 determines that if this county were to be redone at all 1 inch equals 500 scale panels, it would result in 136 panels. If it were done at all 1 inch equals 1,000 scale panels, it would result in 40 panels. If it were done at all 1 inch equals 2,000 scale panels, it would result in 12 panels.

(2) In consultation with IDNR staff, we determined the appropriate combination of scales for each county. For example, based on level of development, it was determined that, for Clark County, a combination of 50% 1,000 scale panels and 50% 2,000 scale panels is appropriate. This resulted in a panel count of 26.

Mapping activities will be managed by FEMA Region V staff. IDNR will be involved through scoping, data gathering, quality reviewing, and outreach activities.

Level 1 upgrades will be performed by IDIQ contractors and processed by the MCC. Level 2 upgrades will be performed by a combination of IDIQ and CTP contractors. Existing flood studies will be used extensively, including Ohio River analyses performed by the USACE, Louisville District, and the Little Calumet River Levee project in Lake County.

Cost share requirements will be met primarily through the following:

(1) All current and proposed CTPs are assumed to provide 25% of the processing costs through a combination of data sharing and in-kind services. Initial conversations with CTPs by IDNR staff led to this assumption.

(2) Contributions by IDNR staff in data gathering, quality reviewing, and outreach activities need to be recognized as "in-kind" services in support of this plan. Therefore, a 5% contribution on the processing of all Level 1 studies was assumed.

(3) The planned use of digital orthophoto quadrangle (DOQ) maps for base maps represents a contribution from FEMA's mapping partner, the U.S. Geological Survey (USGS). A unit cost of $430 per panel is built into the overall unit costs for Level 1 map production provided by FEMA for use in

development of these plans. Therefore, this unit cost was multiplied by the number of panels per county and added into MP2 as a partner contribution for Level 1 upgrades.

(4) Existing studies to be incorporated, including the Ohio River study, and IDNR studies have been assumed to be counted against data sharing for flood theme upgrades. *The Ohio River study is a $100,000 study and was cost shared 50-50 with the State of Indiana. The results are expected by the end of Calendar Year 2002.*

(5) IDNR plans to contract with their State Penal Industry to perform digitization of flood insurance data (similar to a recent project by the State of Ohio). The contract amount of $90,000 is assumed to be used against the cost-share requirement.

(6) The Little Calumet River Levee project in Lake County, IN, is resulting in Level 2 upgrade in Lake County. This is an Illinois and Indiana project carried out by the USACE, Chicago District, and has been initiated in FY02. However, $300,000 from FY03 is required to fund the remainder of this project. How to recognize the significant contributions of the USACE, Chicago District, for the Lake County portion of the FY03 plan has not been determined.

Cost share items (1), (2), and (3) have been added to MP2 and result in a cost-share contribution of 16.7%. For the purpose of this plan, it will be assumed that items (4), (5), and (6) will help the State of Indiana reach their GPRA goal of a 20% match of these funds.

### *Estimated Costs to Complete Proposed Mapping Activities*

The activities to be performed by the State are estimated to cost approximately $7.09 million. Approximately $5.89 million of this amount will be provided by FEMA to the State, and the State will provide a match of 12 percent, or about $1.20 million, through both in-kind and cash contributions. The costs for each county are listed in Table 2. The unit costs that were used in preparing these estimates came from FEMA Headquarters, as follows:

Per panel costs:

| | Regional Flood Data Updates | National Processing and Coordination |
|---|---|---|
| Level 1 | $2,100* | $4,650 |
| Level 2 | $16,250 | $6,650 |

*This unit cost was applied only to Level 1 panels with revised flood theme data.

**Table 2 – Estimated Costs of Planned Production**

| County | Level 1 Upgrade Panels | Level 2 Upgrade Panels | FEMA Contribution ($Millions) | State and Partner Contribution ($Millions) | Total Cost |
|---|---|---|---|---|---|
| Bartholomew | 32 | 11 | 0.327 | 0.074 | 0.401 |
| Benton | 20 | 0 | 0.080 | 0.013 | 0.093 |
| Boone | 33 | 12 | 0.351 | 0.078 | 0.428 |
| Cass | 21 | 0 | 0.084 | 0.014 | 0.098 |
| Clark | 26 | 0 | 0.127 | 0.017 | 0.144 |
| Clay | 15 | 0 | 0.060 | 0.010 | 0.070 |
| Crawford | 25 | 0 | 0.106 | 0.017 | 0.123 |
| Daviess | 23 | 0 | 0.092 | 0.015 | 0.107 |
| Dearborn | 21 | 0 | 0.084 | 0.014 | 0.098 |
| Dubois | 40 | 0 | 0.160 | 0.026 | 0.186 |
| Floyd | 28 | 0 | 0.124 | 0.019 | 0.143 |
| Gibson | 26 | 0 | 0.104 | 0.017 | 0.121 |
| Greene | 22 | 0 | 0.088 | 0.015 | 0.102 |
| Hancock | 48 | 0 | 0.191 | 0.032 | 0.223 |
| Harrison | 34 | 0 | 0.165 | 0.023 | 0.188 |
| Hendricks | 56 | 0 | 0.223 | 0.037 | 0.260 |
| Jay | 20 | 0 | 0.080 | 0.013 | 0.093 |
| Jefferson | 50 | 0 | 0.220 | 0.033 | 0.253 |
| Johnson | 51 | 0 | 0.203 | 0.034 | 0.237 |
| Lake | 96 | 0 | 0.300 | 0 | 0.300 |
| Madison | 30 | 10 | 0.300 | 0.069 | 0.369 |
| Marion | 96 | 0 | 0.293 | 0.153 | 0.446 |
| Noble | 52 | 0 | 0.159 | 0.083 | 0.242 |
| Ohio | 8 | 0 | 0.032 | 0.005 | 0.037 |

| County | Level 1 Upgrade Panels | Level 2 Upgrade Panels | FEMA Contribution ($Millions) | State and Partner Contribution ($Millions) | Total Cost |
|---|---|---|---|---|---|
| Orange | 18 | 0 | 0.072 | 0.012 | 0.084 |
| Parke | 23 | 0 | 0.092 | 0.015 | 0.107 |
| Perry | 21 | 0 | 0.107 | 0.014 | 0.121 |
| Porter | 36 | 12 | 0.360 | 0.082 | 0.442 |
| Posey | 20 | 0 | 0.097 | 0.013 | 0.110 |
| Shelby | 31 | 11 | 0.324 | 0.072 | 0.396 |
| Spencer | 20 | 0 | 0.101 | 0.013 | 0.114 |
| Steuben | 15 | 0 | 0.046 | 0.024 | 0.070 |
| Sullivan | 25 | 0 | 0.100 | 0.016 | 0.116 |
| Switzerland | 20 | 0 | 0.101 | 0.013 | 0.114 |
| Tippecanoe | 33 | 11 | 0.330 | 0.075 | 0.405 |
| Warrick | 26 | 0 | 0.120 | 0.017 | 0.137 |
| Washington | 24 | 0 | 0.096 | 0.016 | 0.112 |
| **Total** | 1,185 | 67 | 5.894 | 1.195 | 7.089 |

# IndianaMap Prospectus

**Indiana Geographic Information Council, Inc.**

245 W. 44th Street
Indianapolis, IN 46208
317.920.9150
www.in.gov/ingisi

# IndianaMap Prospectus

It is with great pleasure to share with you a vision for the IndianaMap – Indiana's statewide geographic information (GI) infrastructure and contribution to the National Map. Through the Indiana Geographic Information Council (IGIC), a strong foundation of coordination exists along side an unprecedented spirit of collaboration. IGIC is a representative council of over 12 different sectors that utilize GIS, including counties, cities and towns, state, federal agencies, utilities and private industry. Indiana is a leading I-Team[1] state, recipient of the 2002 ESRI[2] Special Achievement Award, a HAZUS[3] pilot area, NSGIC[4] member state, FGDC[5] cooperating partner, contains 4 NIMA[6] "133 Cities," and is one of 8 states in the NGA[7] Center for Best Practices.

The vision of the IndianaMap is presented here within the context of emergency management and homeland security. IGIC is working closely with Indiana's homeland security authority, the Counter-Terrorism and Security Council (C-TASC), to develop a strategy to implement the IndianaMap to foster the integration of GI technology in state and local government emergency operations. At this time there are four technology programs C-TASC is implementing: interoperable communications, linked criminal justice files, web-based emergency communications network, and a statewide GIS system. While all of these systems have their value with respect to homeland security, it is C-TASC's point of pride to advocate the implementation of GIS into our emergency planning and response. Indiana was the only state to identify an I-Team as a statewide priority in the President's Homeland Security Report.

In addition to homeland security, economic development and land and water resources are driving issues for statewide GIS in Indiana. For each of these driving issues, strong champions back the IndianaMap vision with full recognition of the cross-disciplinary role GIS plays to improve decision making – GIS saves lives and saves money.

## *The IndianaMap Vision*

The IndianaMap vision embraces the role of geographic information, technologies and innovative institutional agreements to enable improved government service to citizens, and an enhanced ability for citizens to stay informed and to engage in the democratic process. To achieve this vision, IndianaMap encompasses a number of aspects:

1) integration now of the best available data, focusing on local sources, with state and federal,
2) a distribution mechanism that provides access to data and metadata (i.e., clearinghouse)(IGIC currently operates an NSDI[8] metadata catalog node through the IUPUI University Library),
3) a web portal with tiered access for decision-makers and the public with non-technical interface to viewing geospatial information,
4) planning through the I-Team process for 100% coverage of all 7 framework layers, with variable resolution (minimum 1:24:000), within 3-5 years, and
5) education and outreach on the relevancy, importance and capabilities offered by the IndianaMap.

IndianaMap will provide mutual benefit to each level of government that in turn share in its development and maintenance. IndianaMap will initiate a locally-based, distributed statewide GI program of mutual support to county emergency operation centers; facilitate local, state and federal response to human (terrorism) and natural disasters; and, establish a foundation to support field operations and public information. It will:

1) establish the interoperable framework of technologies necessary to support discovery, access, integration, and application of spatial information from the local to state level
2) research and prototype methods to integrate GI from cooperating jurisdictions in Indiana (semantic interoperability)

3) establish a policy forum to identify and address GI policy issues for government services, emergency / disaster management, and citizen democracy.

## *Issues and Strategy*

Indiana faces similar issues to those faced by the National Map when looking toward local data sources. To fully achieve its vision, Indiana must develop processes and solutions to overcome the technical and policy issues related to data sharing, with the ultimate goal of compiling a public, seamless, computerized map statewide.

The challenges to GIS interoperability include the following:

- Multiple GIS software platforms – e.g., ESRI (ArcView, SDE, ArcIMS); AutoCAD (Map, MapGuide); GeoSQL; Genamap; MapInfo; Smallworld; Intergraph (MicroStation, FRAMME, GeoMedia).
- Multiple coordinate systems/projections – NAD27 and NAD83 State Plane – Indiana East and Indiana West, Lat/Long, UTM and user defined.
- Multiple measurement systems – D-M-S, US survey feet, International survey feet, meters.
- Multiple database schemas for GIS layers and for attribute tables.

To-date, there are few formalized agreements for sharing data or applications among county governments or with the state. Notwithstanding, there are a substantial number of local government units that have expressed a commitment to participate in an IndianaMap pilot program. As suggested below, our strategy is to lead development of the IndianaMap with such a pilot program.

## Business Case

There are many important reasons to build a multi-jurisdictional statewide GIS, including:

- Public Safety Mutual Aid – The County Sheriffs, Police Departments, Fire Departments and ambulance companies all make emergency mutual aid runs into neighboring jurisdictions. It would be valuable to all of these agencies to have access to road network, address, civil boundary, parcel and aerial photography information for areas surrounding their own jurisdiction.
- Disaster Planning, Mitigation and Response – Each County has an Emergency Management Agency which plans for natural disasters and man-made emergencies. Many scenarios call for information outside of their County, such as specifying evacuation routes, following wind plumes, tracing heavier-than-air chemical spills, and locating sources of contamination in hydrography or sewers. The tornado of 20-Sep-2002 crossed thirty-two counties in Indiana providing a critical reminder of the need for responsive disaster mitigation capabilities that can support and link jurisdictions throughout the state. Disaster mitigation plans are not only required for receiving Federal Emergency Management Agency funding, they help save lives.
- Drainage Management – Public works departments, in incorporated areas, and County Surveyors have responsibility for stormwater drainage. Since watersheds cross jurisdiction boundaries, it is useful for stormwater planning and flood management to have a complete understanding of the water courses. There are instances where neglect or construction in one County has impacted flow in an upstream County.
- Water Quality – As with drainage, surface water quality impacts all jurisdictions. It is valuable for environmental managers to have access to all watershed, wetlands and water course data to locate the sources of point pollution and non-point contamination.
- Highway Planning – Metropolitan Planning Organizations plan for highways and thoroughfares in designated metropolitan areas. County Highway departments plan roads in the rest of the state. Better information about roads and development will help road funding in all the counties, and reduce traffic congestion in urban counties. Each county has a department who assigns parcel and building addresses, and it is good practice to understand the existing addresses and ranges in neighboring jurisdictions.

- Economic Development – Planning organizations, Chambers of Commerce, economic development commissions and community foundations all understand the interdependency of the metropolitan areas and therefore the need for regional planning for economic development.
- Water Service – Indianapolis Water Company has lines extending into the counties surrounding Marion County. All other counties have multiple municipal water service districts. It would be valuable to all of these providers to know development information and service territories to help them better plan services, and assist with maintenance and outage response.
- Public Health – County Health departments perform epidemiology studies of contagious diseases and perform other public health planning and remediation programs (i.e., mosquito control) which would be aided by access to the data in neighboring counties. A recent restaurant bacteria case was traced to an establishment near a county line, and infected people in both counties.
- Utility Coordination – the area is covered by numerous water and sewer districts, and multiple gas and electric service providers. It would be valuable to each of the utility companies to have information about the "foreign" infrastructure that coexists or borders their service areas. It would be useful to government agencies (for emergency response and planning) to know where all utility infrastructure is located.
- Community Studies – Universities (IUPUI, Indiana, Purdue, Butler, Indianapolis, Marian, Martin, etc.) study the demographics, social conditions, program assets, land use, tax structure, business climate, agriculture, and environment of communities in Indiana. Access to unified regional data would be useful for these studies.
- Improved Citizen-Centric Services – IndianaMap can become an important resource in helping to engage citizens in understanding and engaging in the debate for proposed issues facing our local to state governments. For instance, IndianaMap provides an opportunity for citizens to visualize the impact of proposed land use changes prior to these actions taking place.

## Statewide Business/Policy Model Proposal

The benefits of the IndianaMap are clear. What is not entirely clear is how a locally-driven IndianaMap (and for that matter National Map) will be maintained. As GI technology advances, commercial off-the-shelf (COTS) and standards-based COTS (SCOTS) solutions are being developed that address many of the technical issues identified above. Issues yet to be resolved include data-sharing policies and the business model for development and on-going maintenance.

IGIC proposes the development of a funding and data policy model to be implemented and demonstrated statewide. The model will encompass a federal, state, local cost-share that would result in maximized benefit and minimized cost to all participants. Such a strategy would support the development and on-going maintenance of the IndianaMap (and our contribution to the National Map) in which state and federal partners would commit base-level support for top-tiered architecture, supplemented with voluntary, locally-driven benefits and options.

## Homeland Security Pilot Proposal

***eMapsIN – Emergency Management, Analysis and Planning System for Indiana***

IndianaMap will be successful when it provides solutions to real problems. The approach of the Homeland Security pilot is to enable the core GI Infrastructure statewide, and apply the core to problems of the state and local community. Solutions must be fashioned to the non-GIS user and will be delivered through an IndianaMap satellite service – eMapsIN.

IGIC proposes a strategy to use data and applications and a standards-based approach for integration to bring a flexible initial operational capacity to emergency management operations statewide. This will be supplemented with added local content within selected multi-county regions, including aggregated local health data so that it is presentable on a national basis. The pilot will be applications-oriented, web-based, with secure / tiered access for county EOCs and health departments. It will be designed to

fit within current emergency management and anti-terrorism strategies, such as GIS implementation for SEMA's Incident Command System, Comprehensive Emergency Management Plan, and syndromic health surveillance. Technical issues include:

1) security
2) disaster mitigation – business recovery – continuity of government
3) preventing loss of communication
4) assuring access to and interoperation with systems in neighboring counties.

## Regional Interoperability Pilot Proposal

### *Building an Interoperable GIS for Central Indiana*

IGIC proposes a pilot project for Central Indiana that develops technical solutions to local government data interoperability issues (as discussed above). It is anticipated that by focusing on a core group of diverse counties, the stage will be set for expansion to the other metropolitan areas of the state, followed by the remaining rural counties. Metropolitan Indianapolis consists of eight counties in central Indiana: Boone, Hamilton, Hancock, Hendricks, Johnson, Marion, Morgan, and Shelby (and 35+ municipal governments).

All of these have developed GIS to some extent, but sharing data is difficult, even though there are numerous benefits to be derived by sharing data between the governmental agencies, local utility companies and the general public. For example, Marion and Hancock informally share data, as do Marion and Hamilton, Boone and Hamilton, and Allen and DeKalb. There is a project underway to collect some GIS data from the eight county governments (and others) to be used on a non-public web service for realtors. Where possible, we would want to cooperate with this project, and make data available for government, utility and public use.

Deliverable products will be the translation software and scripts, documentation of the processes for sharing data between the communities, and documentation of the data in the various agencies and communities with contact information.

**The value of building an interoperable GIS for the Indianapolis metropolitan area is clear, but the effort is not known.** This project will answer several questions:

- What is the effort to build interoperable translators so that data can be kept in its native format by the owner agency, but mapped to a sharable platform?
- Can data in multiple projections and coordinate systems be translated so that the geographic accuracy is maintained? What is lost? How useable will data be that is manipulated to this extent?
- What is the effort of running the data through the manipulation engines?
- How much data can be stored in its native format and accessed "on the fly"? How much data can be accessed remotely, and how much must be copied to a clearinghouse server?

As a side benefit, we will learn the effort to overcome political resistance to sharing GIS data. Additionally we will have a complete inventory of GIS activity in the region, including the feature detail, data quality (positional accuracy, geographic completeness) and an understanding of the update and maintenance procedures and timing.

## Commitment

As an all volunteer organization, IGIC has achieved much success through a dedicated and diverse group of professionals and modest grant support. In partnership with state and local organizations, our suggested state/local contribution toward the development of the IndianaMap is $100,000 (preliminary estimate in matching funds, data, and in-kind services) to be adjusted upwards or downwards accordingly. Most importantly, we have the enthusiastic commitment of several local units of

government and senior level state officials (including the Director of C-TASC) supporting the IndianaMap pilot program. Verbal commitments for participation have already been established with a number of counties.

Not only does GIS have profound modeling and planning capabilities, but the potential to showcase the same with other government agencies is boundless.

[1] I-Team – "Implementation Team" national initiative spearheaded by the federal Office of Management and Budget to energize the National Spatial Data Infrastructure
[2] ESRI – Environmental Systems Research Institute
[3] HAZUS – or "Hazards US", Federal Emergency Management Agency multi-hazards loss estimation methodology pilot project with IMAGIS, Indianapolis / Marion County GIS and Hamilton County, Indiana
[4] NSGIC – National States Geographic Information Council
[5] FGDC – Federal Geographic Data Committee
[6] NIMA – "133 Cities" include: Indianapolis, Ft. Wayne, eastern Chicago metropolitan area, northern Louisville metropolitan area; National Imagery and Mapping Agency, provides timely, relevant, and accurate Geospatial Intelligence in support of national security
[7] NGA – National Governors' Association
[8] NSDI – National Spatial Data Infrastructure

*To participate, contact:*
Jill Saligoe-Simmel, Ph.D.
Indiana Geographic Information Council, Inc.
317-920-9150
jsaligoe@iupui.edu

**NATURAL RESOURCES COMMISSION**
**Information Bulletin #37**

## Submission and Review of Hydraulic Modeling for Permit Applications under the Flood Control Act

### Background

The Flood Control Act (IC 14-28-1) prohibits the construction of residences or abodes within a floodway and requires all other construction, excavation, or filling activities within a floodway to receive the prior written approval of the Department. With regard to the Department's approval, the Act further states that the director shall issue a permit only if in the opinion of the director the applicant has clearly proven that the structure, obstruction, deposit, or excavation will not do any of the following:

1) Adversely affect the efficiency of or unduly restrict the capacity of the floodway.
2) Constitute an unreasonable hazard to the safety of life or property.
3) Result in unreasonably detrimental effects upon fish, wildlife, or botanical resources.

Additionally, in deciding whether to issue a permit, the director shall consider the cumulative effects of the structure, obstruction, deposit, or excavation when added to past, present, and reasonably foreseeable future actions.

For years, the Division of Water has provided extensive assistance to individuals and engineering consultants in developing the technical documentation needed to meet the burden of proof under the Flood Control Act. The Division of Water has conducted stream modeling, performed multiple reviews of inadequate submittals, and in many cases corrected, modified, or performed modeling to account for cumulative effects. For many reasons this level of assistance is no longer possible or appropriate.

New modeling guidelines (General Guidelines for the Hydrologic – Hydraulic Assessment of Floodplains in Indiana) have been developed, published, and placed on the Division's web site at www.in.gov/dnr/water/surface_water/pdf/fp_guidelines.pdf.

Additionally, training sessions were held in 2002 in Plymouth, Indianapolis, and Jeffersonville to assist consultants in the development of effective flood modeling submittals.

As outlined below, the Division of Water will no longer participate in project specific flood model development as part of a permit application. Division staff will only serve as reviewers. Additionally, a "Two strikes" policy will be implemented for permit application submittals with modeling errors.

**Review Procedures**

The procedures for the review of submitted computer modeling as part of a permit application will be as follows:

- All submitted modeling will be evaluated based on the modeling guidelines outlined in the General Guidelines for the Hydrologic – Hydraulic Assessment of Floodplains in Indiana available on the Division's website at www.in.gov/dnr/water/surface_water/pdf/fp_guidelines.pdf

- Submitted modeling should be prepared under the supervision of a professional engineer with knowledge of generally accepted modeling principles.

- Within the Division of Water, Engineering Services Center (ESC) staff will be available to meet with a consultant to discuss modeling for a project, or will answer questions that a consultant may have in the process of developing a model. ESC staff will no longer perform a preliminary review of a model before a permit application is submitted.

- A submitted model will only be reviewed when accompanied by a completed modeling checklist and project evaluation table as described in the General Guidelines for the Hydrologic – Hydraulic Assessment of Floodplains in Indiana. Failure to submit a checklist or project evaluation table does not count as a strike against the review of the model since no review has actually been completed. The applicant will, however, be notified through an abeyance letter that a completed modeling checklist and project evaluation table are required and that refusal to submit these will result in the denial of the permit application.

- ESC staff will review submitted modeling but under no circumstances will they change those models. Neither will ESC staff call or email consultants to work out explicit modeling errors. Staff will comment on the modeling using the abeyance process.

- Only explicit modeling errors will be noted and identified as deficiencies. The rationale behind any aspects of the submitted modeling that are "engineering judgment" (Manning's "n" values, coefficients, etc.) must be documented in the submitted checklist or model report. Failure to document "engineering judgment" is an explicit modeling error.

- An abeyance determination may state the comments are not inclusive. If the modeling is incomplete or contains inaccurate or outdated data, mistakes may not be apparent until the applicant clarifies the model. The submission of an incomplete model or a model that contains inaccurate or outdated data will count as a "strike" against the submitted model.

- ESC staff will be available to discuss projects before a submittal, or after an abeyance letter has been mailed. Design details are the responsibility of the applicant and the consultant, however, and ESC staff will not suggest design changes to make a project approvable.

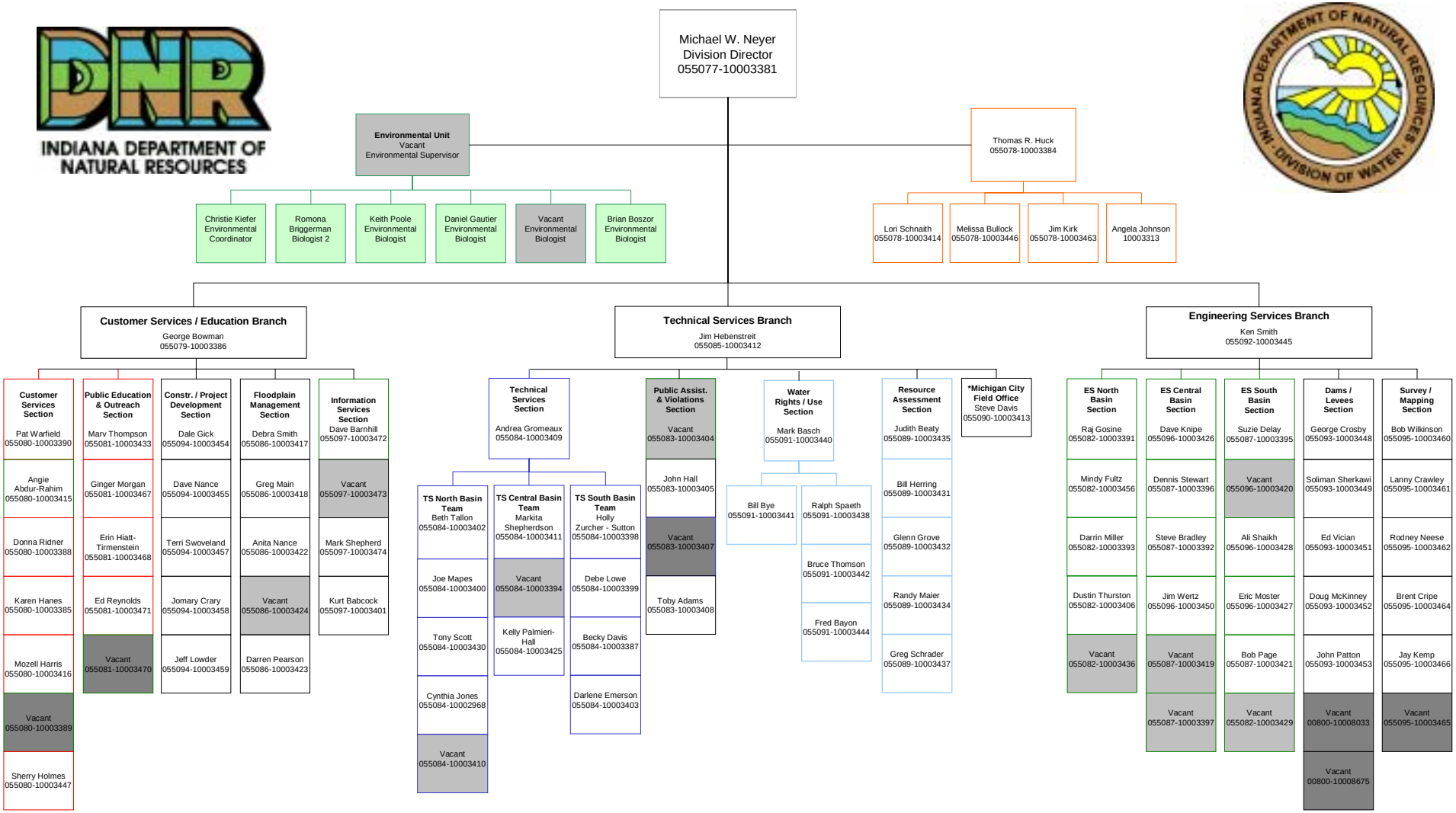
- The "Two Strikes" policy will be applied to all permit applications with submitted modeling that do not follow the General Guidelines for the Hydrologic – Hydraulic Assessment of Floodplains in Indiana. If after two attempts the submitted computer modeling is determined to be incorrect, the permit application will be denied and the applicant advised of the opportunity to seek administrative review. In the alternative, a new permit application with revised modeling may be submitted.

- A model submittal that has a project evaluation table that shows an excessive surcharge as a result of the proposed project will not be reviewed; the applicant will, however, be notified through an abeyance letter that the project as submitted is not approvable. The submission of a model with an excessive surcharge counts as a "strike", so the applicant will not have the benefit of fixing modeling problems based on ESC staff review comments. One exception is if the surcharge is contained entirely on the applicant's property and the applicant has clearly shown this to be true, then the submitted modeling will be reviewed.

- If a project is redesigned after the abeyance letter has been mailed, the redesigned submittal, if submitted under the same application number, is considered the second submittal and subject to only one review before approval or denial. If the applicant decides to withdraw the application to redesign the project, the subsequent application submittal will be treated as an initial submittal.

- The standard abeyance period for model revisions will be 90 days. A single extension of 90 days may also be granted.

- Any testimony regarding the technical merits of the submitted modeling or project alternatives will be the responsibility of the applicant. ESC staff would provide testimony as to the circumstances of their review.




Employee Name
Position Number

***Intermittent Positions Not Shown***

# Division of Water

## Staff Assignments

**•Names**

**•Position Numbers**

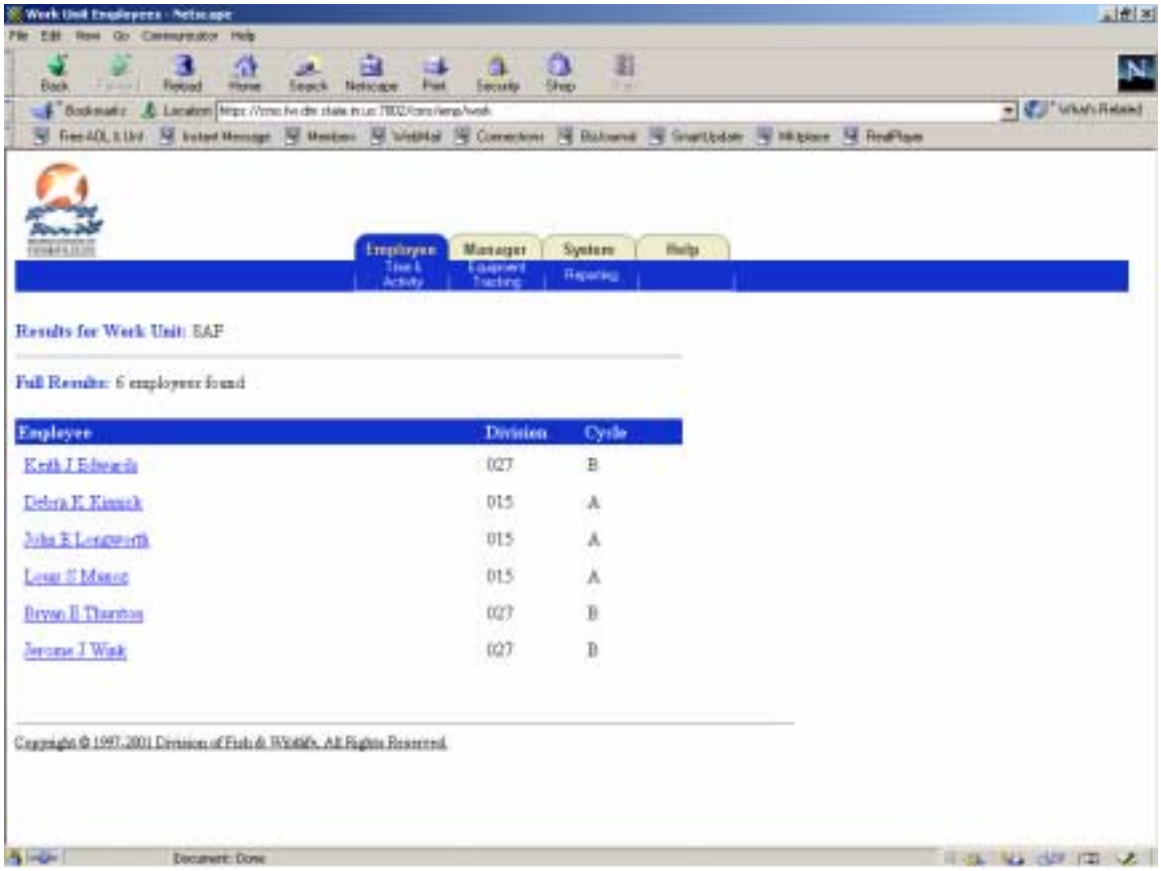
**December 30, 2003**

# CMS Time
# Basic Information and Screen Shots

Note: This only includes basic information about what each screen shot represents.

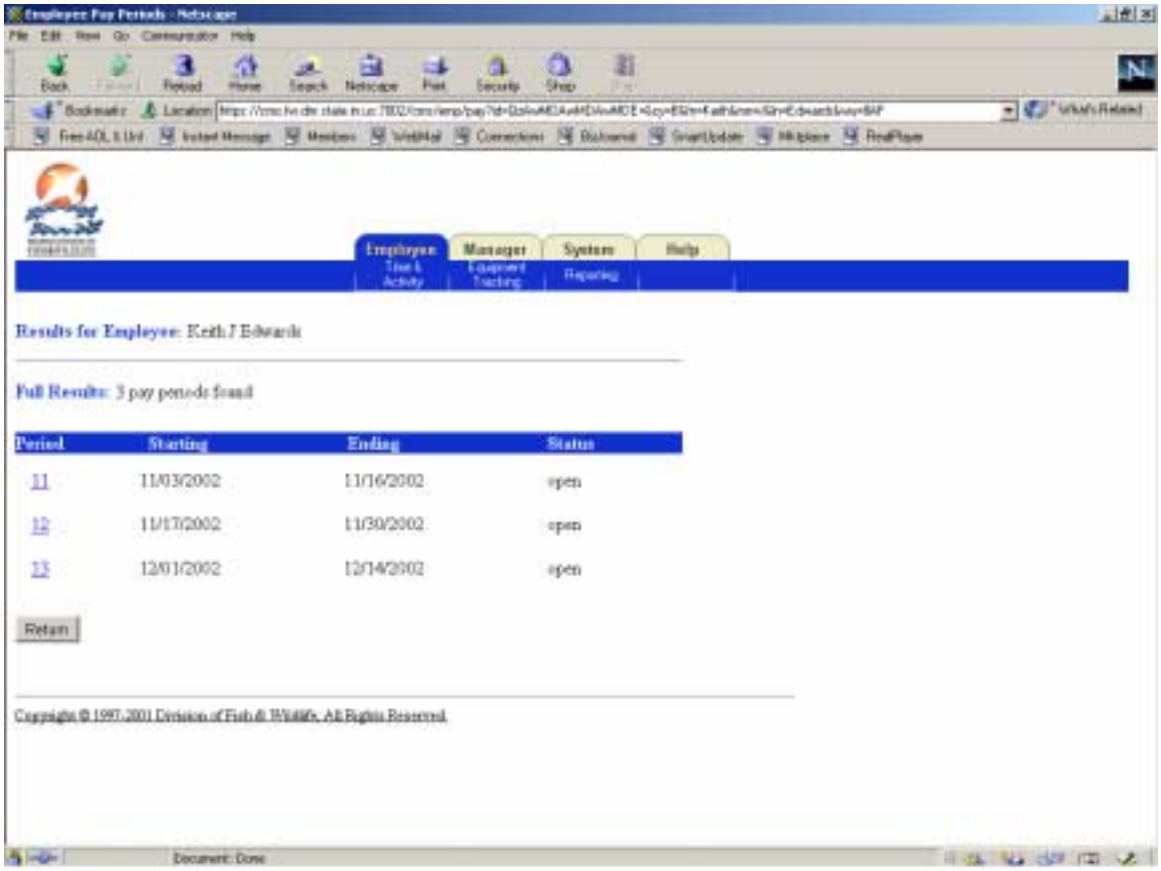
**Screen Shot 1**

This is the Work Unit / Property Code screen that displays everyone that is assigned to the perspective work unit. Also shows if the employee is part of the A or B pay cycle.



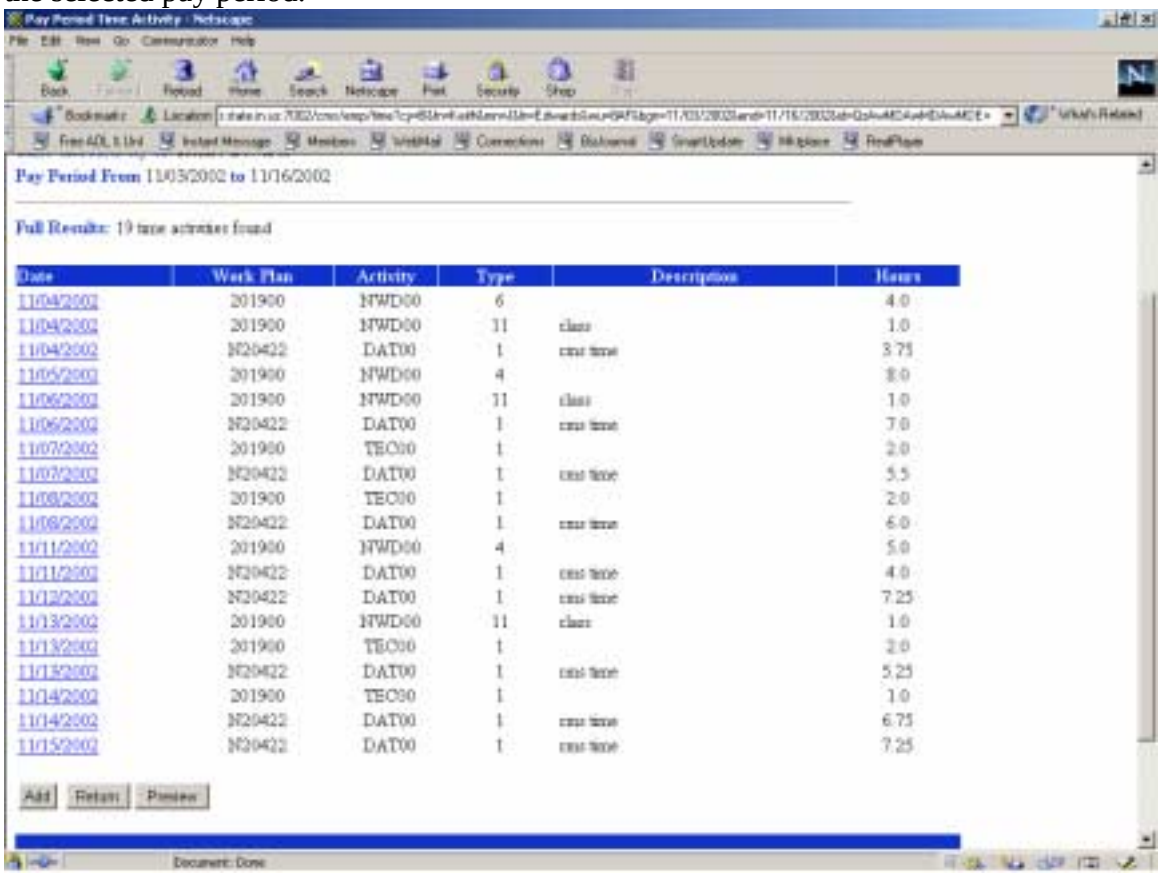
**Screen Shot 2**

This is the pay period screen that shows the three currently active pay periods for the employee's pay cycle. When the system administrator closes a pay period it disappears from the list.



**Screen Shot 3**

This is the time activities screen that displays all of the entries that have been made for the selected pay period.



Pay Period From 11/03/2002 to 11/16/2002

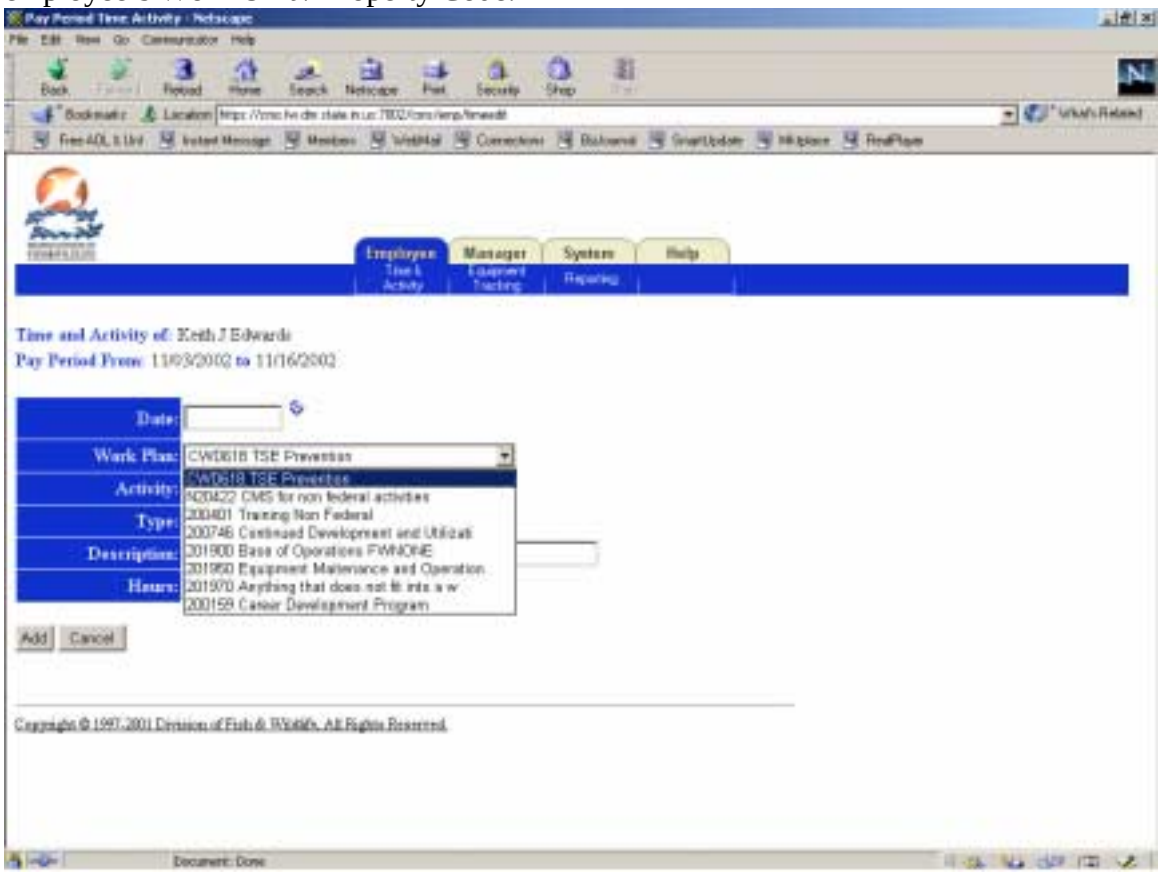
Full Results: 19 time activities found

| Date | Work Plan | Activity | Type | Description | Hours |
|---|---|---|---|---|---|
| 11/04/2002 | 201900 | NWD00 | 6 | | 4.0 |
| 11/04/2002 | 201900 | NWD00 | 11 | class | 1.0 |
| 11/04/2002 | N20422 | DAT00 | 1 | cmc time | 3.75 |
| 11/05/2002 | 201900 | NWD00 | 4 | | 8.0 |
| 11/06/2002 | 201900 | NWD00 | 11 | class | 1.0 |
| 11/06/2002 | N20422 | DAT00 | 1 | cmc time | 7.0 |
| 11/07/2002 | 201900 | TEC00 | 1 | | 2.0 |
| 11/07/2002 | N20422 | DAT00 | 1 | cmc time | 5.5 |
| 11/08/2002 | 201900 | TEC00 | 1 | | 2.0 |
| 11/08/2002 | N20422 | DAT00 | 1 | cmc time | 6.0 |
| 11/11/2002 | 201900 | NWD00 | 4 | | 5.0 |
| 11/11/2002 | N20422 | DAT00 | 1 | cmc time | 4.0 |
| 11/12/2002 | N20422 | DAT00 | 1 | cmc time | 7.25 |
| 11/13/2002 | 201900 | NWD00 | 11 | class | 1.0 |
| 11/13/2002 | 201900 | TEC00 | 1 | | 2.0 |
| 11/13/2002 | N20422 | DAT00 | 1 | cmc time | 5.25 |
| 11/14/2002 | 201900 | TEC00 | 1 | | 1.0 |
| 11/14/2002 | N20422 | DAT00 | 1 | cmc time | 6.75 |
| 11/15/2002 | N20422 | DAT00 | 1 | cmc time | 7.25 |

Add | Return | Preview

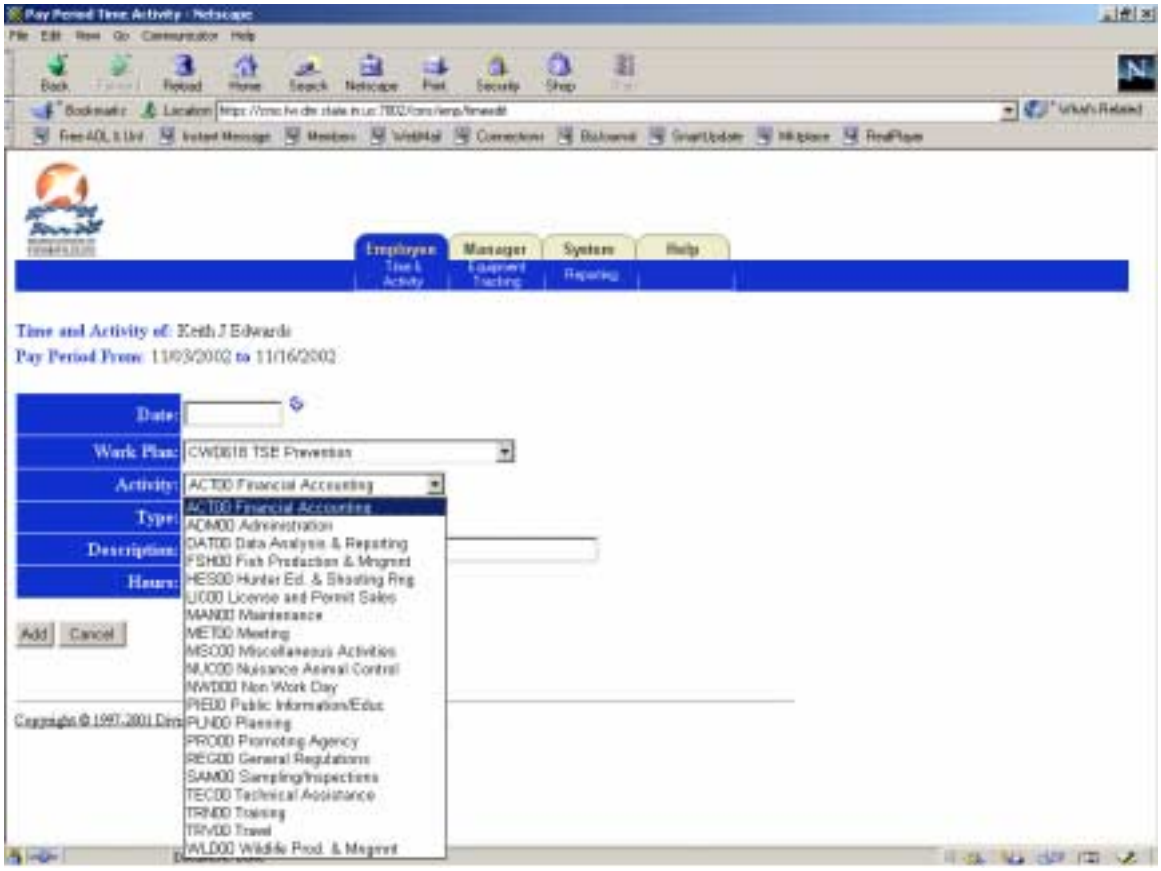
**Screen Shot 4**

This screen shows examples of Work Plans / Projects that are available to select when a new time entry is being made. Which Work Plans are displayed depends upon the employee's Work Unit / Property Code.



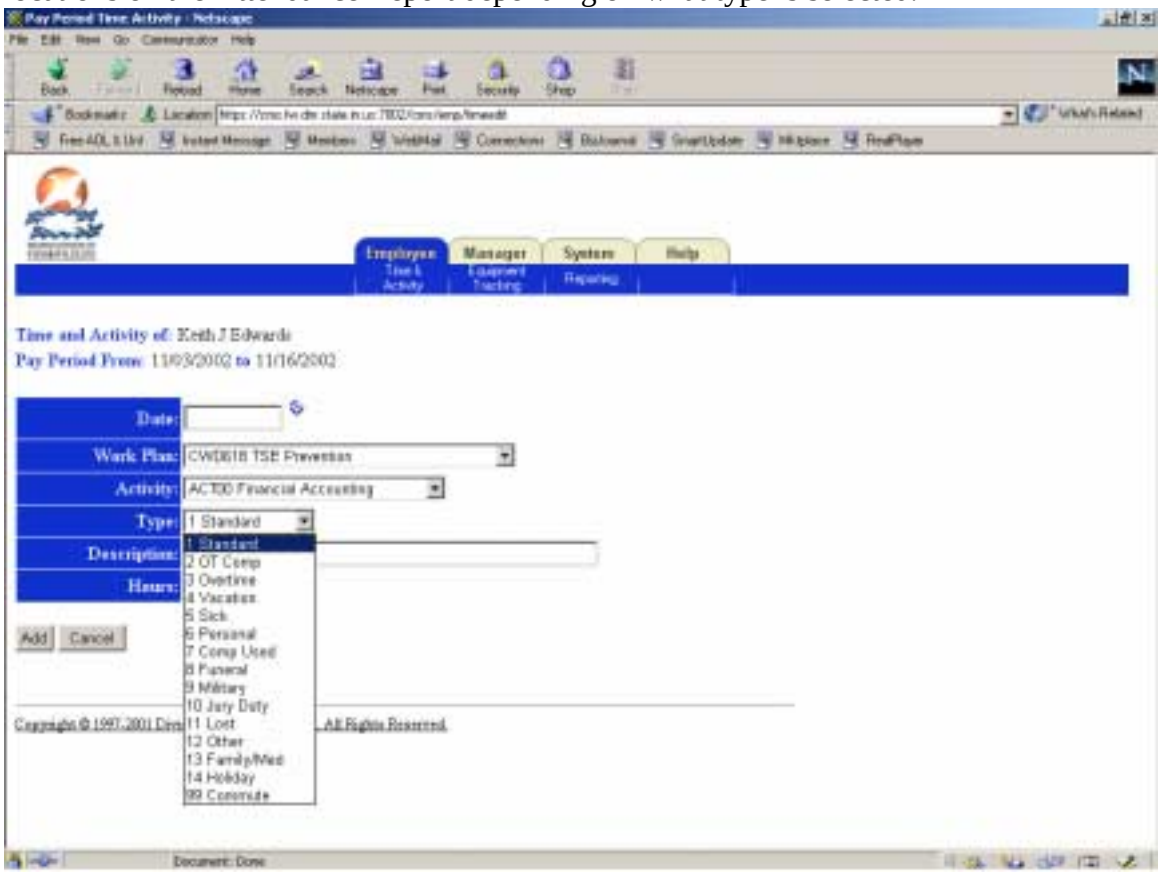
**Screen Shot 5**

This screen shows the list of activities that can be chosen to help identify what kind of time entry is being added. This is constant list that shows up on every employee's drop down list.



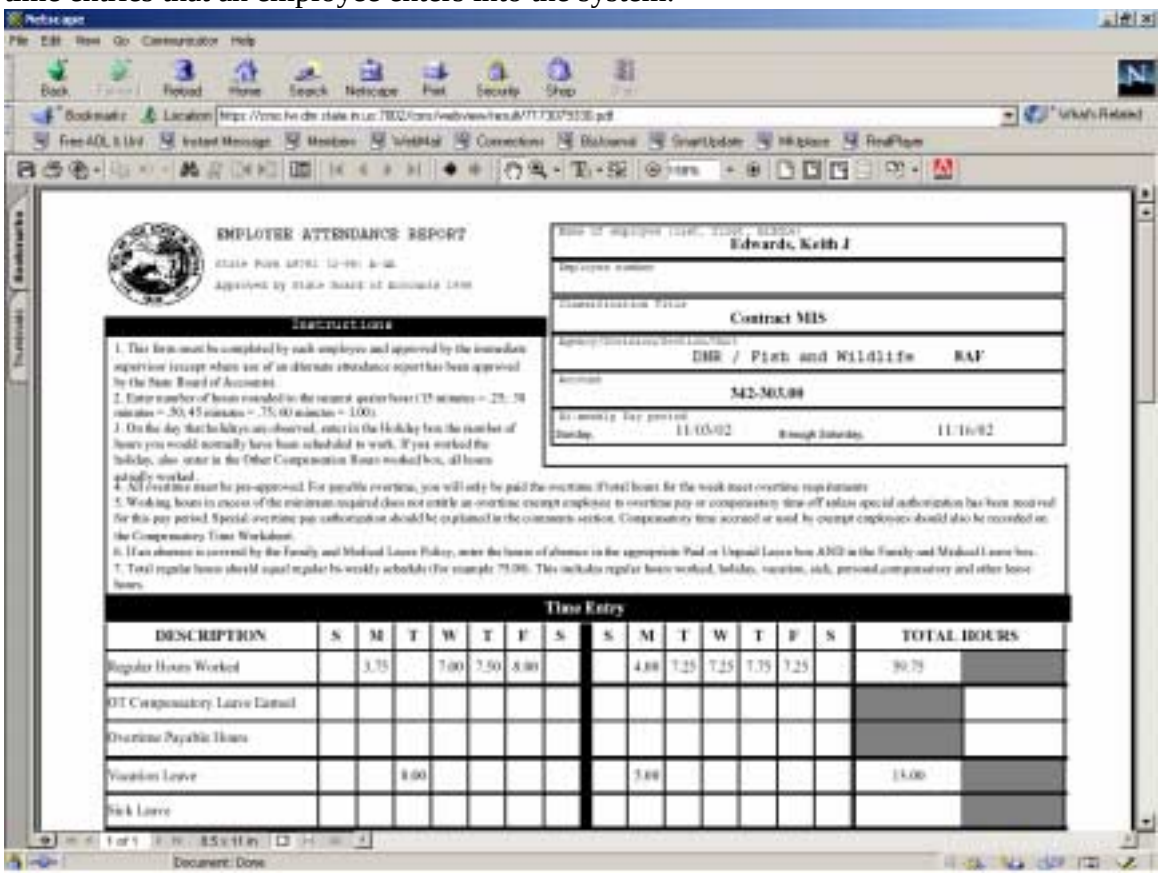
**Screen Shot 6**

This screen shows the types of pay that can be selected. These match up exactly with the state Employee Attendance Report and will automatically fill the hours into the correct locations on the Attendance Report depending on what type is selected.



**Screen Shot 7**

This screen shot is just a sample of the Attendance Report that can be generated from the time entries that an employee enters into the system.



EMPLOYEE ATTENDANCE REPORT

Edwards, Keith J

Contract MIS

DNR / Fish and Wildlife RAF

342-303.00

11/03/02 11/16/02

Instructions

1. This form must be completed by each employee and approved by the immediate supervisor (except where use of an alternate attendance report has been approved by the State Board of Accounts).
2. Enter number of hours rounded to the nearest quarter hour (15 minutes = .25; 30 minutes = .50; 45 minutes = .75; 60 minutes = 1.00).
3. On the day that holidays are observed, enter in the Holiday box the number of hours you would normally have been scheduled to work. If you worked the holiday, also enter in the Other Compensation Hours worked box, all hours actually worked.
4. All overtime must be pre-approved. For payable overtime, you will only be paid the overtime if total hours for the week meet overtime requirements.
5. Working hours in excess of the minimum required does not entitle an overtime exempt employee to overtime pay or compensatory time off unless special authorization has been received for this pay period. Special overtime pay authorization should be explained in the comments section. Compensatory time accrued or used by exempt employees should also be recorded on the Compensatory Time Worksheet.
6. If an absence is covered by the Family and Medical Leave Policy, enter the hours of absence in the appropriate Paid or Unpaid Leave box AND in the Family and Medical Leave box.
7. Total regular hours should equal regular bi-weekly schedule (for example 75.00). This includes regular hours worked, holidays, vacation, sick, personal, compensatory and other leave hours.

Time Entry

| DESCRIPTION | S | M | T | W | T | F | S | S | M | T | W | T | F | S | TOTAL HOURS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Regular Hours Worked | | 3.75 | | 7.00 | 7.50 | 8.00 | | | 4.00 | 7.25 | 7.25 | 7.75 | 7.25 | | 80.75 | |
| OT Compensatory Leave Earned | | | | | | | | | | | | | | | | |
| Overtime Payable Hours | | | | | | | | | | | | | | | | |
| Vacation Leave | | | 8.00 | | | | | | 5.00 | | | | | | 13.00 | |
| Sick Leave | | | | | | | | | | | | | | | | |